Dell™ OptiPlex™ 960 Service Manual

Mini Tower Computer

Desktop Computer

Small Form Factor Computer

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Battery

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

Replacing the Battery

Replacing the Battery

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years.

The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -
please run SETUP program
```

or

```
Strike the F1 key to continue,
F2 to run the setup utility
```

To determine whether you need to replace the battery, reenter the time and date in system setup and exit the program to save the information. Turn off your computer and disconnect it from the electrical outlet for a few hours; then reconnect the computer, turn it on, and enter system setup (see the *Dell™ Technology Guide*). If the date and time are not correct in system setup, replace the battery.

You can operate your computer without a battery; however, without a battery, the configuration information is erased if the computer is turned off or unplugged from the electrical outlet. In this case, you must enter system setup (see the *Dell™ Technology Guide*) and reset the configuration options.

CAUTION: A new battery can explode if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

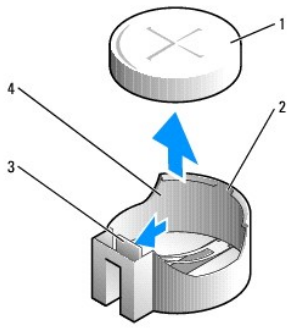
To remove the battery:

1. If you have not already done so, make a copy of your configuration information, found in system setup.
2. Perform the procedure Before Working on Your Computer.
3. Remove the computer cover.
4. Locate the battery socket.

NOTICE: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

NOTICE: To avoid damage to the battery connector, you must firmly support the connector while removing the battery.

5. Remove the system battery.
   a. Support the battery connector by pressing down firmly on the positive side of the connector.
   b. While supporting the battery connector, press the battery tab away from the positive side of the connector and pry the battery it up out of the securing tabs at the negative side of the connector.



1	system battery	2	positive side of battery connector
3	battery socket tab	4	battery socket

6. Install the new system battery.
   a. Support the battery connector by pressing down firmly on the positive side of the connector.
   b. Hold the battery with the "+" facing up, and slide it under the securing tabs at the positive side of the connector.
   c. Press the battery straight down into the connector until it snaps into place.
7. Perform the procedure After Working on Your Computer.
8. Enter system setup (see the *Dell™ Technology Guide*) and restore the settings you recorded in step 1.
9. Properly dispose of the old battery as described in the safety information that shipped with your computer.

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Contacting Dell

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To contact Dell for sales, technical support, or customer service issues:

1. Visit **support.dell.com**.
2. Verify your country or region in the **Choose a Country / Region** drop-down menu at the bottom of the page.
3. Click **Contact Us** on the left side of the page.
4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.

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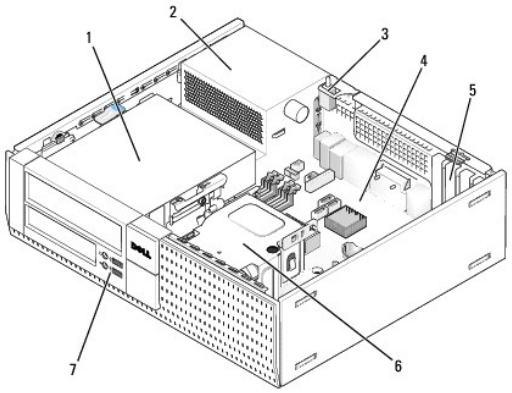
Desktop Computer

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

Inside View of Your Computer

Inside View of Your Computer



1	drive bays (media card reader, floppy drive, optical drive, hard drive(s))	2	power supply
3	chassis-intrusion switch	4	system board
5	card slots	6	heatsink assembly
7	front I/O assembly		

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Dell™ OptiPlex™ 960 Service Manual

Desktop Computer

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System Board
Memory
Troubleshooting Tips
Contacting Dell

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DCNE

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- Cards

Cards

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

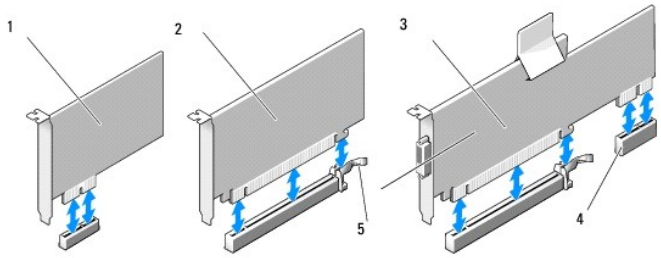
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets help to keep foreign objects out of your computer and help direct airflow for cooling.

Your Dell™ computer provides the following connectors for PCI and PCI Express (PCIe) cards:

- One low-profile PCIe x16 card slot
- Two connectors for low-profile PCI cards
- One low-profile PCIe x1 card slot
- One connector for an internal wireless card

PCI and PCIe Cards

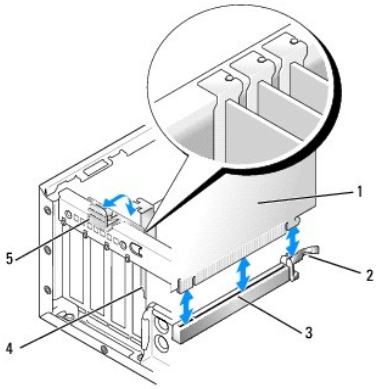


1	PCIe x1 card	2	PCIe x16 card
3	PCIe x16 riser interface	4	PCIe x1 card
5	release lever, securing tab		

Installing a PCI Card

If you are replacing a PCI card, remove the current driver for the card from the operating system. See the documentation that came with the card for information.

1. Perform the procedure Before Working on Your Computer.
2. Gently press the release tab on the card-retention latch all the way up.



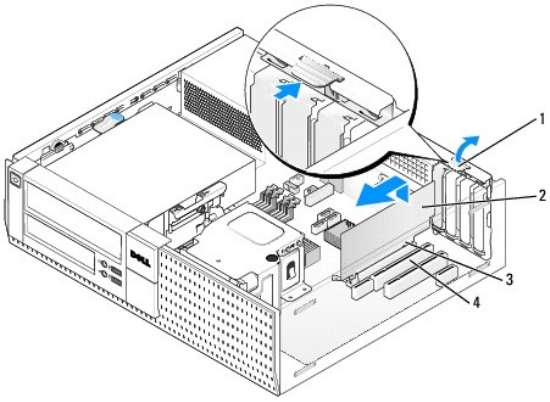
1	card	2	release lever, securing tab
3	system board connector	4	card insert
5	card-retention latch		

3. If you are installing a card in an empty card connector on the system board, remove the filler bracket to create a card-slot opening at the back of the computer. Then continue with step 5.

4. If you are installing a card to replace one already installed in the computer, remove the installed card (see Removing a PCI Card).

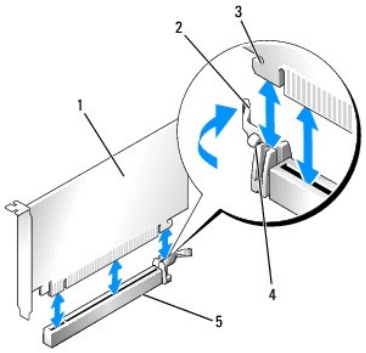
5. Prepare the card for installation.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.



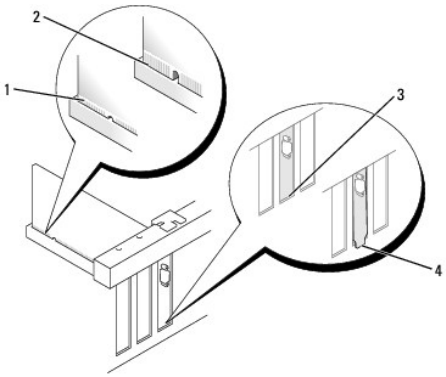
1	release tab on card retention latch	2	card
3	card-edge connector	4	card connector

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.



1	PCIe x16 card	2	release lever
3	securing slot (not all cards)	4	securing tab
5	PCIe x16 card connector		

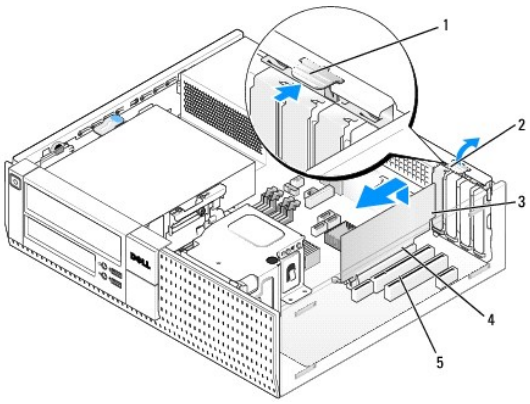
6. Place the card in the connector and press down firmly. Using the following illustration as a guide, ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

NOTE: If you are installing a PCIe x16 card, ensure that the securing tab on the connector's release lever fits into the slot on the front end of the card.

7. Gently rotate the release tab downward to move the card-retention latch into place to secure the cards.



1	release tab	2	card-retention latch
3	card	4	card-edge connector
5	card connector		

NOTICE: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

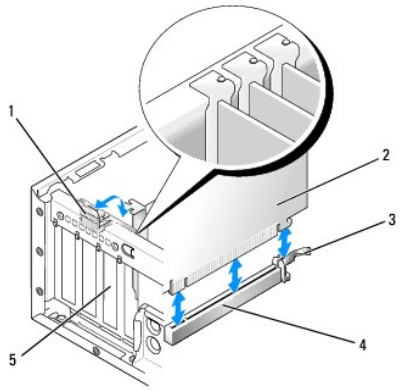
8. Connect any cables that should be attached to the card.
9. Perform the procedure After Working on Your Computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

10. If you installed a sound card:
    a. Enter system setup, select **Audio Controller**, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back or front panel.
11. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **Network Controller**, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the connector on the network adapter card. Do not connect the network cable to the integrated network connector on the back panel of the computer.
12. Install any drivers required for the card as described in the card documentation.

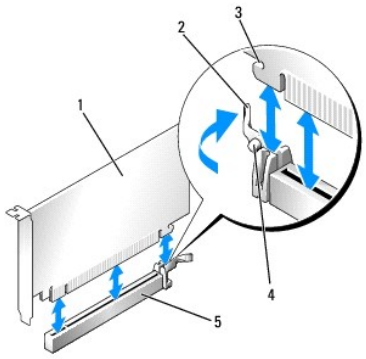
Removing a PCI Card

1. Perform the procedure Before Working on Your Computer.
2. Gently rotate upward the release tab on the card-retention latch.



1	card retention latch	2	card
3	release lever	4	system board connector
5	card insert		

3. If necessary, disconnect any cables connected to the card.
4. If you are replacing a PCIe x16 card, remove the installed card by gently pulling the release lever away from the card until securing tab is out of the securing slot. Then lift the card out of the chassis.



1	PCIe x16 card	2	release lever
3	securing slot (not all cards)	4	securing tab
5	PCIe x16 card connector		

5. Grasp the card by its top corners, and ease it out of its connector.
6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

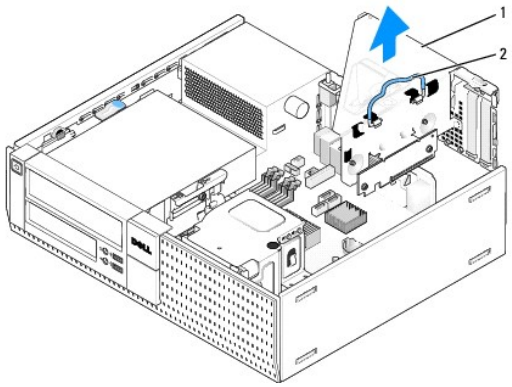
7. Rotate the release tab downward to snap the card-retention latch into place.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

8. Perform the procedure After Working on Your Computer.
9. Uninstall the card's driver. See the documentation that came with the card for instructions.
10. If you removed a sound card:
    a. Enter system setup, select **Audio Controller**, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the audio connectors on the computer back panel.
11. If you removed a network adapter card:
    a. Enter system setup, select **Network Controller**, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the integrated network connector on the back panel of the computer.

Installing a PCI Card in the Riser-Card Cage

1. Perform the procedure Before Working on Your Computer.
2. If applicable, remove the card installed in the PCIe connector on the system board.
3. Remove the riser-card cage:
    a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.
    b. Gently pull on the handle and lift the riser-card cage up and away from the computer.



1	riser-card cage	2	handle

4. If you are installing a new card, remove the filler bracket to create an empty card-slot opening.

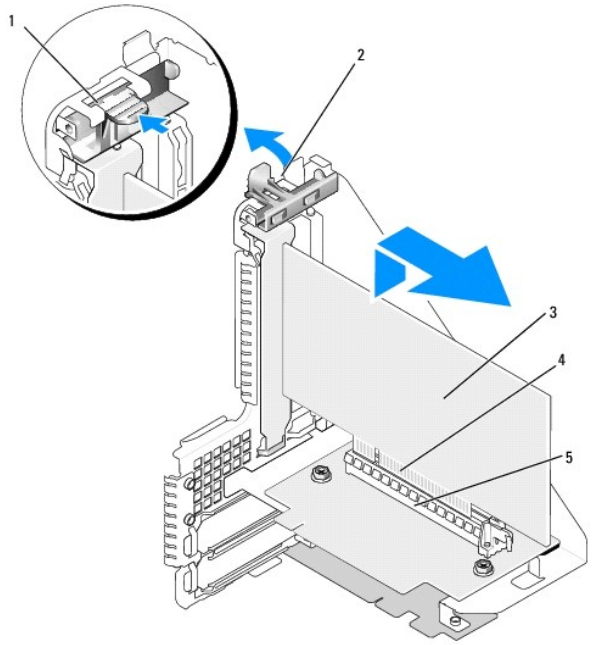
   If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Grasp the card by its corners, and ease it out of its connector.

   NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

5. Prepare the new card for installation.

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

6. Press the release tab to raise the card-retention latch.

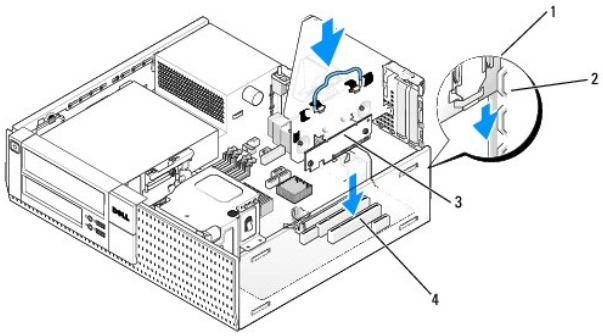


1	release tab	2	card-retention latch
3	card	4	card-edge connector
5	card connector		

7. Insert the card firmly into the card connector on the riser-card cage.

8. Lower the card-retention latch and press it into place, securing the card(s) in the computer.

9. Replace the riser-card cage:
    a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
    b. Ensure that the riser cards are fully seated in the connectors on the system board.



1	riser-card cage	2	slots
3	riser cards (2)	4	system board connectors (2)

10. Reconnect any cables that you removed in step 3.

11. Connect any cables that should be attached to the card.

NOTICE: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

12. Perform the procedure After Working on Your Computer.

13. If you installed a sound card, perform the following steps:
    a. Enter system setup, select **Audio Controller**, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel.

14. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **Network Controller** and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

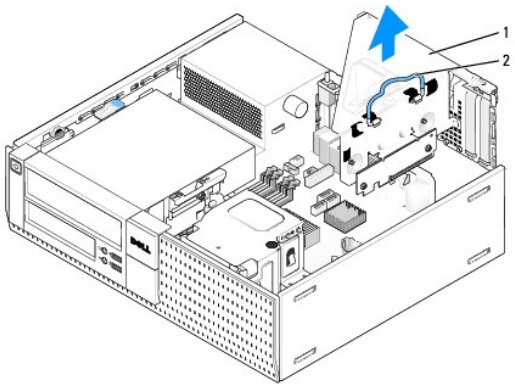
NOTICE: If you disable the integrated network adapter, you will not have AMT functionality.

15. Install any drivers required for the card as described in the card documentation.

Removing a PCI Card From the Riser-Card Cage

1. Perform the procedure in Before Working on Your Computer.

2. Remove the riser-card cage:
    a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.
    b. Gently pull on the handle and lift the riser-card cage up and away from the computer.

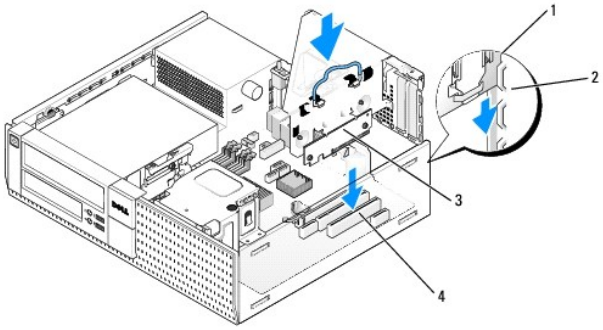


1	riser-card cage	2	handle

3. Press in on the tab to raise the card-retention latch.
4. If necessary, disconnect any cables connected to the card.
5. Grasp the card by its top corners, and ease it out of its connector.
6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

7. Lower the card-retention latch and press it into place.
8. Replace the riser-card cage:
   a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
   b. Ensure that the riser cards are fully seated in the connectors on the system board.

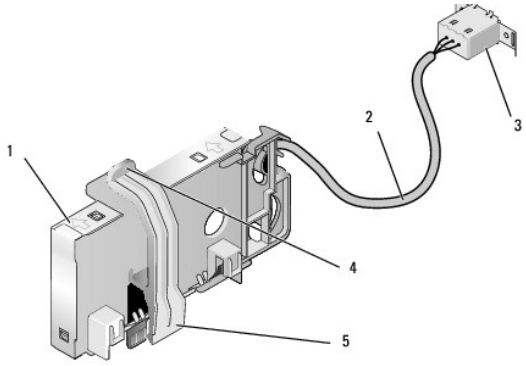


1	riser-card cage	2	slots
3	riser cards (2)	4	system board connectors (2)

9. Perform the procedure After Working on Your Computer.
10. Uninstall the card's driver. See the documentation that came with the card for instructions.
11. If you removed a sound card:
    a. Enter system setup, select **Audio Controller**, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the audio connectors on the computer back panel.
12. If you removed a network adapter card:
    a. Enter system setup, select **Network Controller**, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the integrated network connector on the back panel of the computer.

Internal Wireless Card - Installation

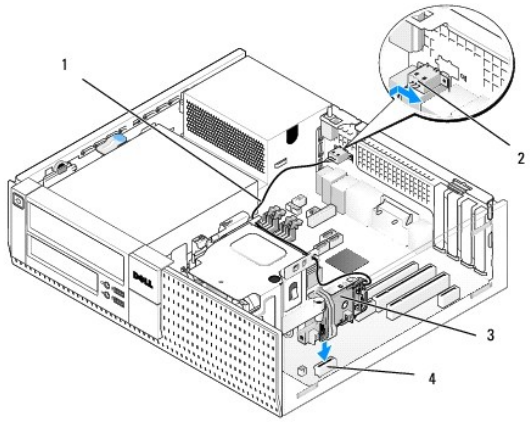
The internal wireless card is an optional device.



1	wireless card assembly	2	wireless card cable to antenna
3	Wi-Fi external antenna connector	4	card retention clasp release
5	card retention clasp		

To install the card, do the following:

1. Perform the procedure Before Working on Your Computer.
2. If installed, remove the filler plug covering the opening in the back panel for the Wi-Fi external antenna connector.
3. Locate the wireless card connector on the system board (see System Board Components).
4. Position the wireless card connector directly above the system board connector with cable edge of the card toward the back of the chassis.



1	wireless card cable	2	Wi-Fi external antenna connector
3	wireless card assembly	4	wireless card connector

5. Insert the wireless card connector into the system board connector until the card retention clasp catches the metal loop on the side of the chassis and holds the card securely in place.

NOTICE: When routing the wireless card cable through the chassis, avoid making sharp bends. This can cause signal degradation.

6. Route the wireless card cable through the cable guides on the top of the heatsink assembly and along the cable bundle for the front panel wiring. Store and secure excess cable on the side of the heatsink assembly near the back of the front panel.
7. Remove the plug on the back panel where the connector for the Wi-FI antenna is installed.
8. Position the external antenna connector at the end of the wireless card cable in the antenna connector opening in the back panel so that the retaining

tabs on the connector faceplate pass through the opening, and the bent end of the connector faceplate is pointed away from the power supply.

9. Slide the connector sideways along the back panel slightly so that the retaining tabs on the connector faceplate hold the connector to the back panel.
10. Connect the Wi-Fi external antenna to the wireless card cable connector.
11. Replace the computer cover.
12. Restart your computer. Setup the wireless device software as needed to support your wireless network.

Internal Wireless Card - Removal

To remove an internal wireless card do the following:

1. Perform the procedure in Before Working on Your Computer.
2. Disconnect the Wi-Fi external antenna from the connector on the back of the computer.
3. Disengage the Wi-Fi external antenna connector from the chassis by sliding it along the back panel toward the power supply, then withdrawing it from the opening.
4. Plug the opening for the Wi-Fi external antenna connector using the cover provided with the computer, if available.
5. Remove the wireless card cable from its routing path.
6. Grasp the wireless card assembly at the ends, press down the card retention clasp release and lift the card to unplug it from the system board wireless card connector. Remove the wireless card assembly from the chassis.
7. Close the opening for the Wi-Fi external antenna connector with the plug provided for the computer. Contact Dell for a replacement plug if none is available.
8. Replace the computer cover.

Installing a Second External Serial Port

If adding an external serial port using a serial connector mounted on a slot filler bracket, connect the internal cable of the connector to the internal serial port connector on the system board (see System Board Components).

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Chassis Intrusion Switch

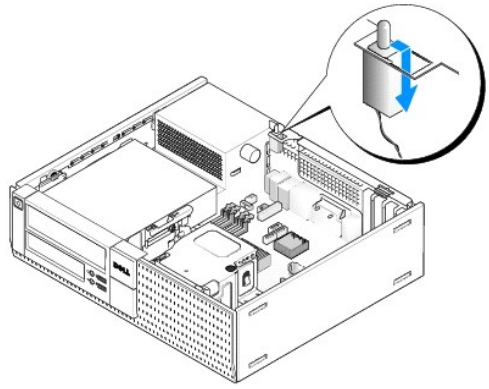
Chassis Intrusion Switch

⚠ **CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

Removing the Chassis Intrusion Switch

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the chassis intrusion switch cable from the system board by using two fingers to squeeze the release mechanism on one side of the connector as you pull to disconnect the cable connector.
3. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until it snaps securely into place.
2. Reconnect the cable to the system board.
3. Perform the procedure After Working on Your Computer.

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F2> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.
3. In the **Settings** menu, select **Security**, then **Chassis Intrusion**. Use the **tab**, **arrow**, and **space bar** keys to choose the option you prefer. If you changed the setting, move to the **Apply** button and press **Enter**.

NOTE: The default setting is **On-Silent**.

4. Save your BIOS settings and exit system setup.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Desktop Computer Cover

Desktop Computer Cover

Removing the Desktop Computer Cover

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

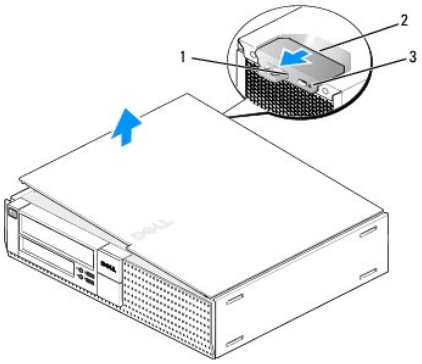
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Perform the procedure Before Working on Your Computer.
2. If a security cable or a padlock (through the padlock ring) is attached, remove it.

NOTE: For convenience, lay the computer on its side before working inside the chassis.

3. Locate the cover release latch and slide it back as you lift the end of the cover near the latch.
4. With the cover end near the latch raised slightly, slide the cover toward the latch end of the chassis to pull the tabs at the other end of the cover out of the slots in the chassis.

CAUTION: Graphics card heatsinks can become very hot during normal operation. Ensure that a graphics card heatsink has had sufficient time to cool before you touch it.



1	padlock ring	2	cover release latch
3	security cable slot		

Replacing the Desktop Computer Cover

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

1. Ensure that all cables are connected, and fold cables out of the way.

   Gently pull the power cables toward you so that they do not get caught underneath the drives.
2. Ensure that no tools or extra parts are left inside the computer.
3. To replace the cover:

a. Align the bottom of the cover with the hinge tabs located along the bottom edge of the computer.

b. Using the hinge tabs as leverage, rotate the cover downward to close it.

c. Snap the cover into place by pulling back on the cover release latch and then releasing the latch when the cover is properly seated.

d. Ensure that the cover is seated correctly before moving the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

4. Attach the computer stand (if applicable). For instructions, see the documentation that came with the stand.

5. Connect your computer and devices to electrical outlets, and turn them on.

   After you remove and replace the cover, the chassis intrusion detector (optional on some computers), if installed and enabled, causes the following message to appear on the screen at the next computer start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector by changing **Chassis Intrusio**n to **On** or **On-Silent**. See the following:

   - Mini Tower — Resetting the Chassis Intrusion Detector
   - Desktop — Resetting the Chassis Intrusion Detector
   - Small Form Factor — Resetting the Chassis Intrusion Detector

NOTE: If an administrator password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Processor

Processor

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

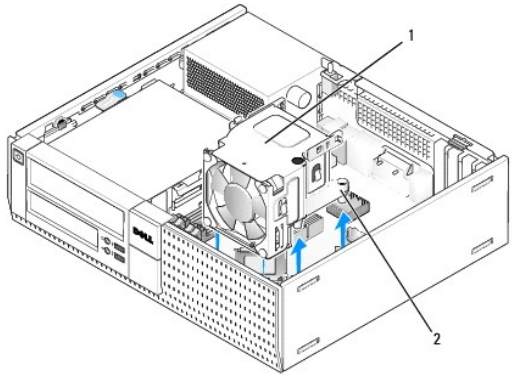
Removing the Heatsink Assembly

The heatsink assembly is comprised of the heatsink and the fan and shroud assembly.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the fan cable from the system board (see System Board Components).
3. If cables are routed through the cable guides on the back of the fan shroud, remove them from the guides.
4. Loosen the four captive screws, one on each corner of the heatsink assembly.

CAUTION: The heatsink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

5. Lift the heatsink assembly upward to remove it from the computer. Lay the heatsink down on its side to avoid contaminating the thermal solution.

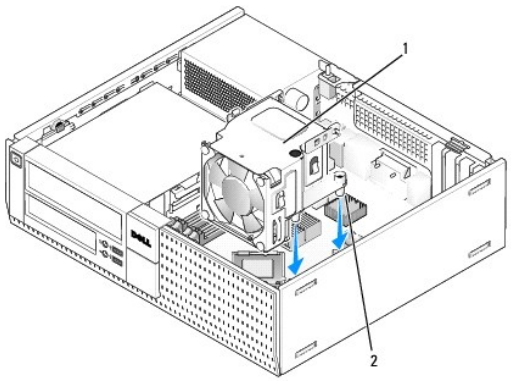


1	heatsink assembly	2	captive screw housing (4)

Replacing the Heatsink Assembly

1. Lower the heatsink assembly into the computer, aligning the captive screws with the retainers screw holes in the system board. Ensure that the fan cable is routed to the right side of the heatsink assembly.
2. Tighten the four captive screws to secure the heatsink assembly.
3. Plug the fan cable into its connector on the system board (see System Board Components).

NOTICE: Ensure that the heatsink assembly is correctly seated and secure.



`

1	heatsink assembly	2	captive screw housing (4)

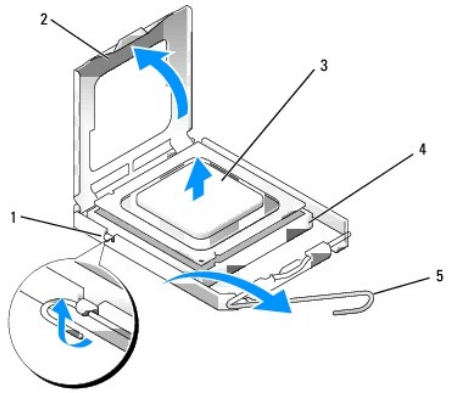
4. If previously cables were routed through the guides on the back of the heatsink assembly, reroute them through the guides.

Removing the Processor

1. Perform the procedure Before Working on Your Computer.
2. Remove the heatsink assembly (see Remove and Replace the Fan and Shroud Assembly).

NOTICE: Unless a different heatsink is required for the new processor, reuse the original heatsink assembly when you replace the processor.

3. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then pull the lever back to release the processor.



1	center cover latch	4	socket
2	processor cover	5	release lever
3	processor		

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

4. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

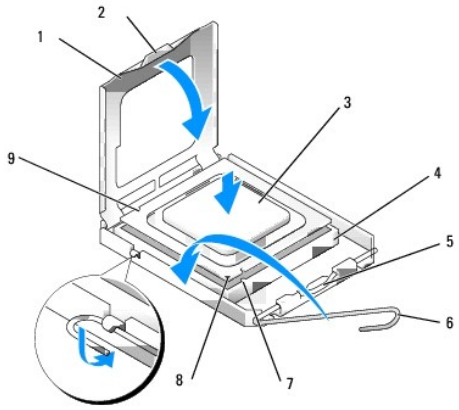
NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Perform the procedure Before Working on Your Computer.
2. Unpack the new processor, being careful not to touch the underside of the processor.

NOTICE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

3. If the release lever on the socket is not fully extended, move it to that position.
4. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
5. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

NOTICE: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

6. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
7. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.
8. Pivot the socket release lever back toward the socket, and snap it into place to secure the processor.
9. Clean the thermal solution from the bottom of the heatsink.

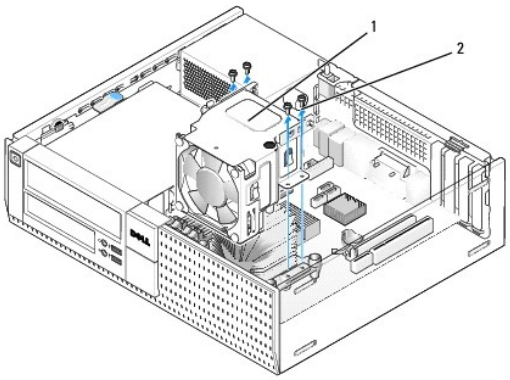
NOTICE: Ensure that you apply new thermal solution. New thermal solution is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

10. Apply the new thermal solution to the top of the processor as needed.
11. Replace the heatsink assembly (see Replacing the Heatsink Assembly).
12. Perform the procedure After Working on Your Computer).

Remove and Replace the Fan and Shroud Assembly

The fan and shroud assembly can be removed and replaced without removing the heatsink.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the fan cable from the system board (see System Board Components).
3. Remove the four black screws that secure the fan and shroud assembly to the heatsink.
4. Lift the fan and shroud assembly out of the chassis.



1	fan and shroud assembly	2	fan shroud screws (4)

5. Position the new fan and shroud assembly onto the heatsink, aligning the screw holes in the shroud with the holes in the heatsink.
6. Secure the shroud to the heatsink with the four black screws removed earlier.
7. Plug the fan cable into its connector on the system board (see System Board Components).
8. Perform the procedure After Working on Your Computer.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Drives

Drives

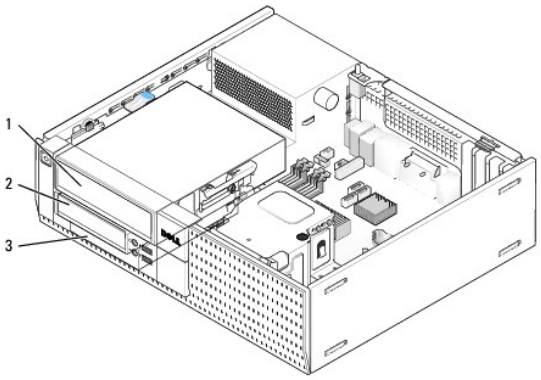
NOTE: If you are removing or adding a device that affects the hardware or RAID configuration of the system, BIOS settings may need to be changed. Refer to the *Dell™ Technology Guide* for more information.

Your computer supports:

- One 3.5-inch SATA (serial ATA) hard drive or up to two 2.5-inch SATA hard drives in the hard drive bay
- One additional 3.5-inch SATA hard drive, floppy drive, or media card reader in the 3.5-inch drive bay
- One SATA optical drive
- One eSATA drive (external)

NOTE: Due to the limited number of drive bays and controllers on this computer, you cannot connect all supported devices at once.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive or media card reader) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.



1	optical drive	2	optional floppy drive, media card reader, or second 3.5" hard drive
3	hard drive		

General Installation Guidelines for SATA Devices

SATA connectors on the system board are labeled SATA0, SATA1, and SATA2.

Hard drives must be connected to the lower numbered SATA connectors, while any other SATA devices (such as an optical drive) must be connected to the remaining SATA connectors numbered higher than the one that the hard drive(s) is connected to. For example, if you have two SATA hard drives and one SATA optical drive, connect the two hard drives to the SATA0 and SATA1 connectors, and connect the SATA optical drive to the SATA2 connector. (See System Board Components for the location of SATA connectors on the system board.)

Connecting Drive Cables

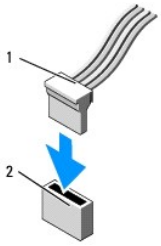
When you install a drive, you connect two cables—a DC power cable and a data interface cable—to the back of the drive.

Data Interface Connectors

SATA Connector

1	data interface cable connector	2	data interface connector

Power Cable Connectors

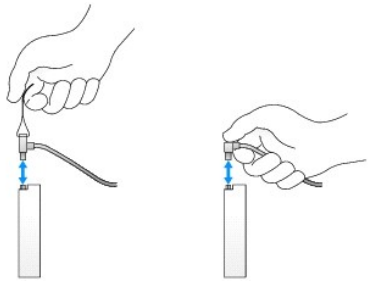


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing a cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

When connecting and disconnecting a cable without a pull tab, hold the cable by the black connector at each end.



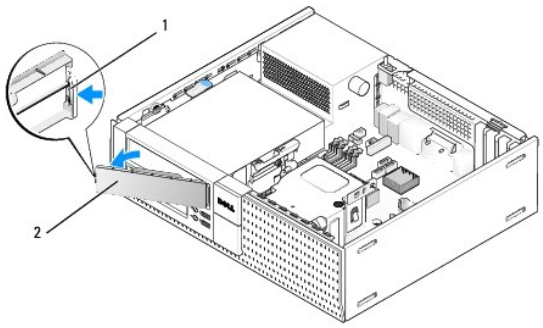
Drive Bay Inserts

Your computer will come with a plastic insert with shoulder screws and a metal insert.

Removing Drive Bay Inserts

If you are installing a new drive:

1. Perform the procedure Before Working on Your Computer.
2. Press the insert retention tab on the inside of the bezel to release the drive bay insert. Remove the drive bay insert from the front of the bezel.



1	retention tab	2	drive bay insert

Replacing Drive Bay Inserts

If you are removing a drive, and need to replace the inserts:

1. At the front of the bezel, place the plastic insert over the drive bay opening and insert the tabs at the right edge of the insert into the slots at the right side of the drive bay opening.
2. Swing the left side of the insert into the opening until it snaps into place.
3. Perform the procedure After Working on Your Computer.

Optical Drive

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

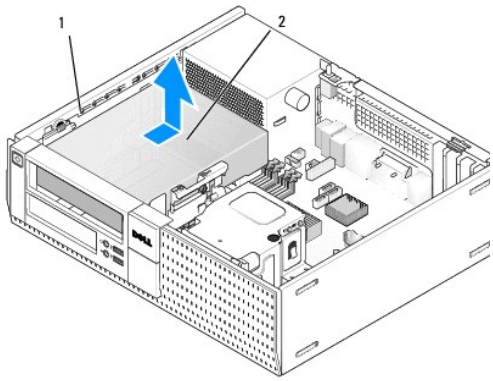
NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive or media card reader) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert. See Removing Drive Bay Inserts.

Removing an Optical Drive

1. Perform the procedure Before Working on Your Computer.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

2. Lift the drive-release latch and slide the drive towards the back of the computer. Then lift it out of the computer.



1	drive release latch	2	optical drive

3. Disconnect the power and data cables from the back of the drive.
4. If you are not replacing the optical drive at this time, install the optical drive bay insert (see Replacing Drive Bay Inserts).

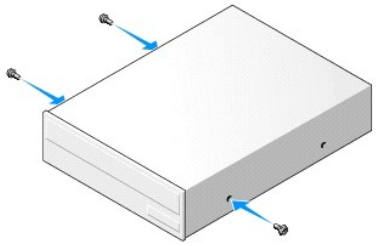
NOTE: Contact Dell if you need a drive bay insert.

Installing an Optical Drive

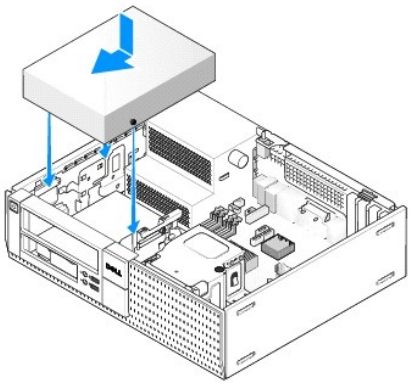
1. Unpack the drive and prepare it for installation.

   Check documentation provided for the drive to verify that the drive is configured for your computer.

2. If you are installing a new drive:
   a. Remove the drive bay insert from the bezel, if necessary (see Removing Drive Bay Inserts).
   b. Remove the three shoulder screws from the drive bay insert and install them on the sides of the new drive.
   c. Lower the drive into the drive bay and slide it forward until it clicks into place.
3. If you are replacing an existing drive:
   a. Follow procedures in Removing an Optical Drive to remove the existing drive.
   b. Remove the three shoulder screws from the existing drive.
   c. Insert the three shoulder screws into the sides of the new drive and tighten them.



4. Connect the power and data cables to the drive.
5. Lower the drive into the drive bay and slide it forward until it clicks into place.



6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. Perform the procedure After Working on Your Computer.
8. Update your configuration information by setting the appropriate **Drive** option (**0** or **1**) under **Drives**. See the *Dell™ Technology Guide* for more information.
9. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Floppy Drive

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.

Removing a Floppy Drive

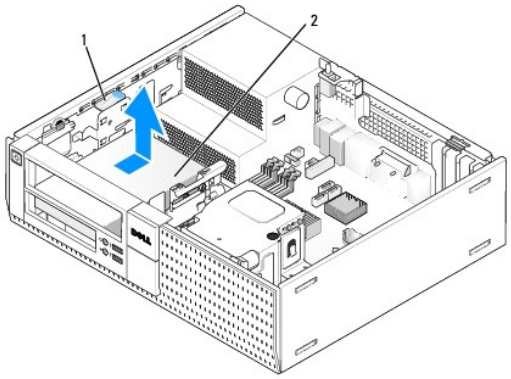
1. If the floppy drive you are removing will not be replaced:
   a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).
   b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**
   c. Choose the option to **Disable** the floppy drive.
   d. Click **Apply**, then **Exit**.
   e. Reboot your computer and power it off.
2. Perform the procedure Before Working on Your Computer.

   NOTE: Since the following steps do not require the complete removal of the optical drive, it is not necessary to disconnect the cables connecting the optical drive.

3. Remove the optical drive (if one exists) and carefully set it aside (see Removing an Optical Drive).

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. Pull up on the drive-release latch and slide the floppy drive toward the back of the computer. Remove the drive from the computer.



1	drive release latch	2	floppy drive

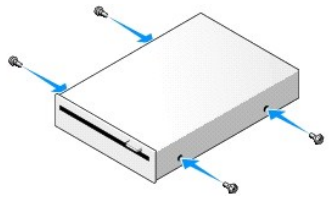
5. Disconnect the power and data cables from the back of the floppy drive.
6. If you are not replacing the floppy drive or media card reader at this time, install the floppy drive bay inserts (see Replacing Drive Bay Inserts). Contact Dell if you need a drive bay insert.

Installing a Floppy Drive

1. If you are installing a new floppy drive
   a. Remove the drive bay insert (see Removing Drive Bay Inserts).
   b. Remove the four shoulder screws from the drive bay insert.
2. If you are replacing an existing floppy drive:

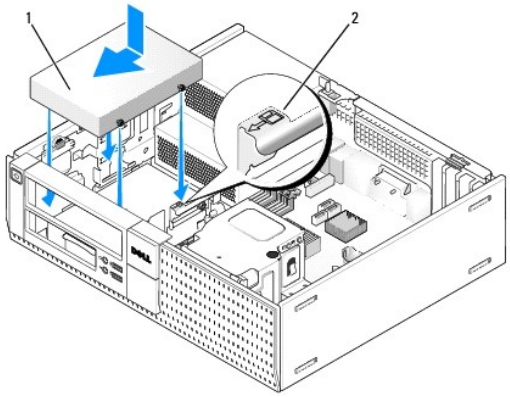
   Remove the four shoulder screws from the existing drive or media card reader.

3. Install the four shoulder screws onto the sides of the new floppy drive and tighten them.



4. Attach the power and data cables to the floppy drive. Ensure that the other end of the cable attaches to the DSKT2 connector on the system board (see System Board Components).

5. Align the shoulder screws with the screw guides, and slide the drive into the bay until it clicks into place.



1	power cable	2	slot verification number

6. Route the floppy drive data cable through the blue cable clips on the back of the heatsink assembly.

7. Replace the optical drive (see Optical Drive).

8. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

9. Perform the procedure After Working on Your Computer.

10. If you are adding a floppy drive to the computer system:

    a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).

    b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**

    c. Choose the option to **Enable** the floppy drive.

    d. Click **Apply**, then **Exit**.

    e. Reboot your computer.

11. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Media Card Reader

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch drive installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.

Removing a Media Card Reader

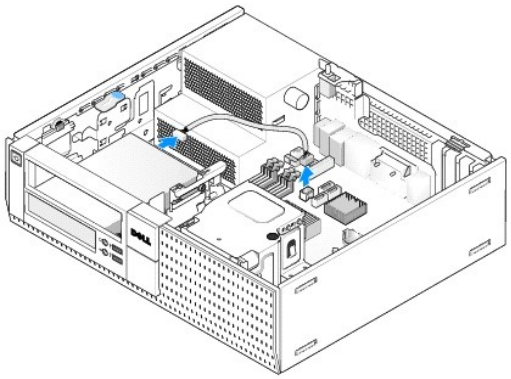
1. Perform the procedure Before Working on Your Computer.

   NOTE: Since the following steps do not require the complete removal of the optical drive, it is not necessary to disconnect the cables connecting the optical drive.

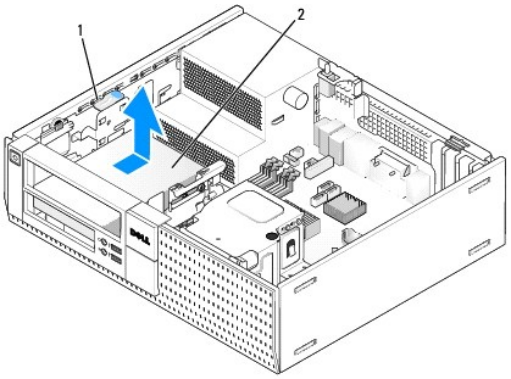
2. Remove the optical drive (if one exists) and carefully set it aside (see Removing an Optical Drive).

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

3. Disconnect the power and data cable from the media card reader and from the system board.



4. Lift the drive-release latch and slide the media card reader toward the back of the computer. Then, lift it out of the chassis.



1	drive release latch	2	media card reader

5. If you are not replacing the media card reader at this time, install the 3.5 inch drive bay insert (see Replacing Drive Bay Inserts). Contact Dell if you need a drive bay insert.

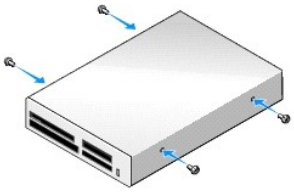
Installing a Media Card Reader

1. If you are installing a new drive or media card reader:
   a. Remove the drive bay inserts (see Removing Drive Bay Inserts).
   b. Remove the four shoulder screws from the drive bay insert.
   c. Pull to remove the 3.5 inch drive bay insert that should be installed in the drive bay.

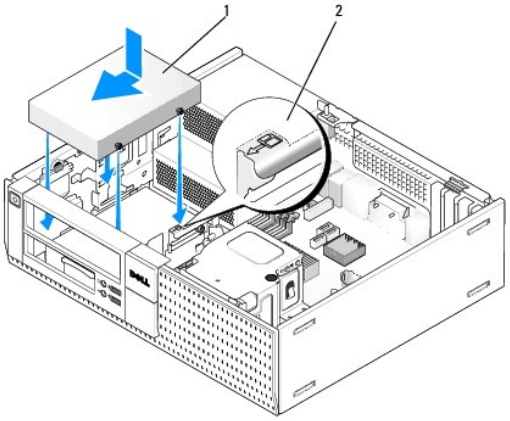
2. If you are replacing an existing media card reader:

   Remove the four shoulder screws from the existing media card reader.

3. Insert the four shoulder screws into the sides of the new media card reader and tighten them.

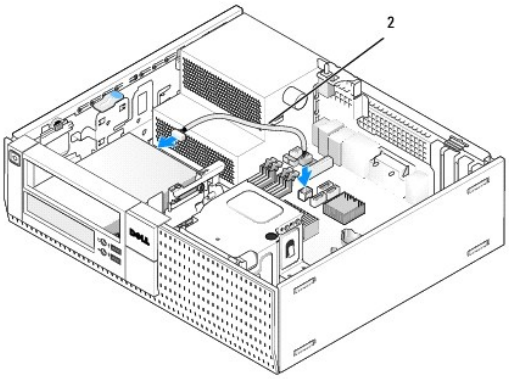


4. Align the shoulder screws with the screw guides in the mounting rack, and slide the media card reader into the bay until it clicks into place.



1	media card reader	2	slot verification number

5. Attach the power and data cable to the media card reader and system board connector.



1	power.and data cable

6. Replace the optical drive (see Optical Drive).

7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

8. Perform the procedure After Working on Your Computer.

9. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Hard Drive

The OptiPlex 960 desktop chassis support either one or two 3.5-inch hard drives, or one or two 2.5-inch hard drives. If a single hard drive is installed, it may be a 3.5-inch or 2.5-inch hard drive. When installing a second hard drive, the hard drive being installed must be he same type (3.5-inch or 2.5-inch) as the drive in the chassis.

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTICE: When handling 2.5-inch hard drives, avoid pressing on the drive label. This can cause serious damage to the drive.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

NOTE: If you are removing or adding a drive that affects the RAID configuration of the system, BIOS settings may need to be changed. Refer to the *Dell™ Technology Guide* for more information.

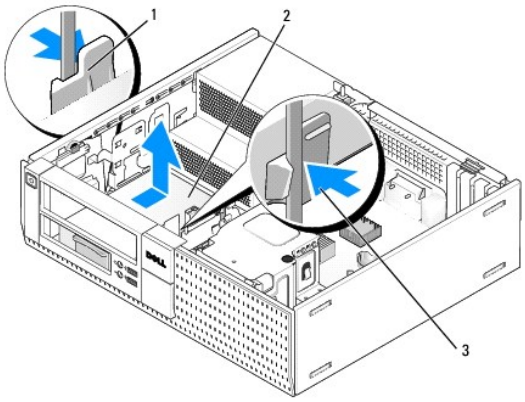
Removing the Primary Hard Drive

1. If you are removing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Perform the procedure Before Working on Your Computer.

NOTE: Since the following steps do not require the complete removal of the optical drive and the floppy drive, it is not necessary to disconnect the cables connecting the two drives.

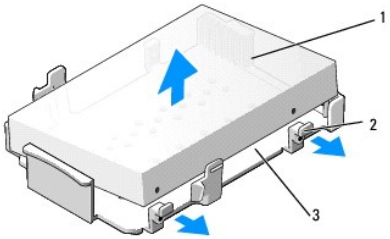
3. Remove the optical drive (see Removing an Optical Drive).
4. If a device is installed in the floppy drive/media card reader bay, remove it (see Removing a Floppy Drive or Removing a Media Card Reader).
5. Press in on the securing clips on each side of the drive bay caddy and slide the caddy towards the back of the computer.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.



1	securing clips (2)	2	hard drive
3	hard drive bay caddy		

6. Lift the drive bay caddy out of the chassis and disconnect the power and data cables from the drive.
7. If the primary hard drive is a 3.5-inch hard drive, remove the drive from the drive bay caddy by gently bending out the release tabs on the side of the caddy and lifting out the drive.

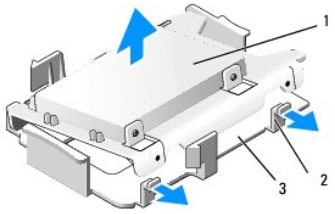


1	hard drive	2	release tabs (2)

3	drive bay caddy		

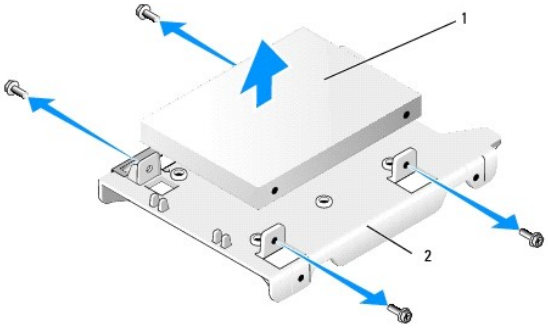
8. If the primary hard drive is a 2.5-inch hard drive, it is mounted on the top (flat side) of a 2.5-inch hard drive caddy in the drive bay caddy. To remove the primary drive:

   a. Remove the 2.5-inch hard drive caddy from the drive bay caddy by gently bending out the release tabs on the side of the caddy and lifting out the 2.5-inch hard drive caddy.



1	2.5-inch hard drive and 2.5-inch hard drive caddy	2	release tabs (2)
3	drive bay caddy		

   b. Remove the hard drive from the caddy by removing the four retaining screws, two on each side of the drive.



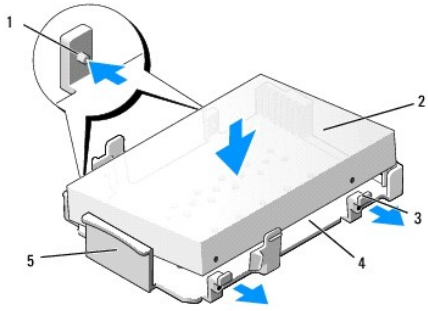
1	hard drive	2	2.5-inch hard drive caddy

Replacing the Primary Hard Drive

1. Unpack the replacement hard drive and prepare it for installation. Use the documentation provided for the drive and configure it for your computer.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

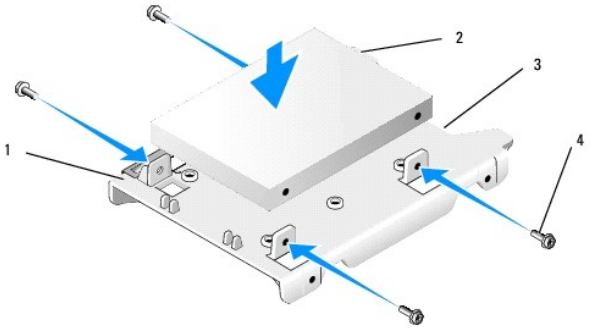
2. If you are installing a 3.5-inch hard drive, insert the hard drive into the drive bay caddy by gently bending out the release tabs on the side of the caddy, and positioning the drive in the caddy. The pins inside the drive bay caddy should align with the screw holes on the side of the drive, and the connector end of the drive should be toward the back of the computer.



1	pin (2 on each side)	2	drive
3	release tabs (2)	4	drive bay caddy
5	front of drive bay caddy		

3. If installing 2.5-inch hard drives as the primary hard drive:

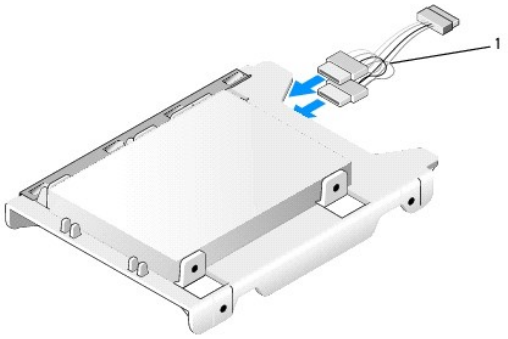
   a. Position the new 2.5-inch hard drive into the flat side of the 2.5-inch hard drive caddy with the side of the drive with the label plate facing away from the caddy, and the connector end of the drive toward the end of the caddy with the cable cutout (back end).



1	2.5-inch hard drive caddy, flat side up	2	2.5-inch hard drive, connector end
3	cable cutout	4	screws (4)

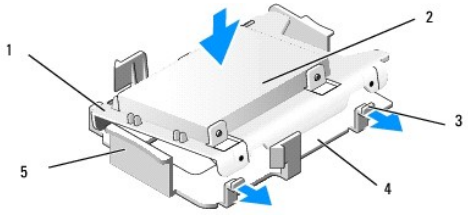
   b. Secure the drive to the drive caddy with four screws, two on each side.

   c. Attach the power cable adapter to the hard drive(s) installed in the caddy.



1	power cable adapter

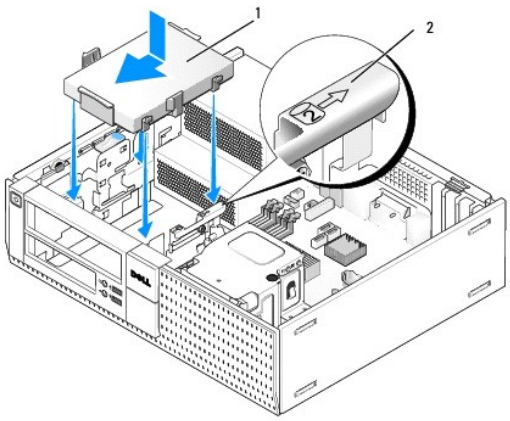
   d. Install the 2.5-inch hard drive caddy into the drive bay caddy by gently bending out the release tabs on the side of the caddy and positioning the 2.5-inch hard drive caddy in the drive bay caddy. The pins inside the drive bay caddy should align with the holes on the sides of the 2.5-inch hard drive caddy, and the connector end of the hard drive should face the back of the drive bay caddy.



1	2.5" hard drive caddy	2	2.5" hard drive
3	release tabs (2)	4	drive bay caddy
5	drive bay caddy front		

4. Connect the power and data cables to the drive(s). When installing the primary hard drive, ensure that the data cable is attached to the SATA0 connector on the system board.

5. Lower the drive bay caddy into the drive bay and slide it forward until it clicks into place.



1	3.5-inch hard drive or 2.5-inch hard drive with caddy	2	slot verification number

6. Route the hard drive power and data cables through cable channels and attach them to cable bundles as needed.
7. Replace the floppy drive or media card reader, if it was installed (see Installing a Floppy Drive, or Installing a Media Card Reader).
8. Replace the optical drive, if it was installed (see Installing an Optical Drive).
9. Ensure that all cable connectors are properly seated and cables are routed through cable channels.
10. Perform the procedure After Working on Your Computer.
11. Connect the power cable and peripheral devices to the computer as needed.
12. Perform the following:
    a. Turn on the computer.
    b. When the computer boots, press F2 to enter system **Setup.** In the **Settings** menu, select Drives, and select Drives in the sub-menu (see the *Dell™ Technology Guide* for more information).
    c. Verify that the information presented for each SATA port is correct. If any settings are changed, click Apply.
    d. Insert a bootable medium into your boot drive.
    e. Click Exit.
13. When prompted, press **F12** to enter the **Boot Drive Menu**. Select a drive with bootable media and continue.
14. When the operating system loads, if the drive you installed is not a bootable drive, partition and logically format your drive, if necessary.

    NOTE: For instructions, see the documentation that came with your operating system.

15. Test the hard drive by running the Dell Diagnostics (see the *Dell™ Technology Guide*).
16. Install your operating system on the hard drive, if needed.

    NOTE: For instructions, see the documentation that came with your operating system.

Removing the Secondary Hard Drive

In the OptiPlex 960 desktop chassis, a secondary 3.5-inch hard drive is installed in the floppy drive/media card reader bay. A secondary 2.5-inch hard drive is installed with the primary 2.5-inch hard drive in the drive bay.

1. If you are removing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Perform the procedure Before Working on Your Computer.

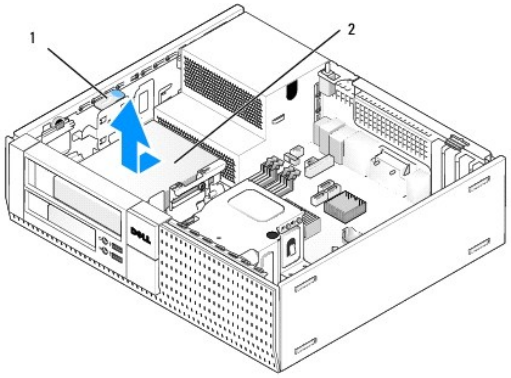
NOTE: Since the following steps do not require the complete removal of the optical drive and the floppy drive, it is not necessary to disconnect the cables connecting the two drives.

3. Remove the optical drive, if installed (see Removing an Optical Drive).

4. If the secondary drive is a 3.5-inch hard drive:

   a. Lift the drive-release latch and slide the drive toward the front of the computer. Then, lift it out of the chassis.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.



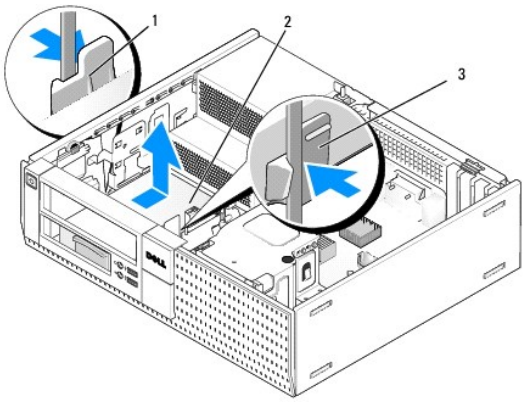
1	drive-release latch	2	hard drive

5. If the secondary hard drive is a 2.5-inch hard drive, it is mounted on the U-shaped side of the 2.5-inch hard drive caddy in the drive bay caddy. To remove it:

   a. Remove the floppy drive or media card reader if installed (see Removing a Floppy Drive or Removing a Media Card Reader).

   b. Disengage the drive bay caddy from the chassis by pressing in on the securing clips on each side of the caddy and sliding the caddy towards the back of the computer.

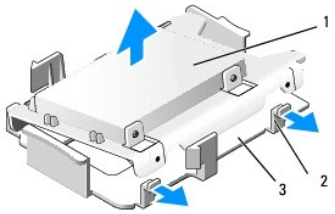
NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.



1	securing clips (2)	2	hard drive
3	drive bay caddy		

   c. Lift the drive bay caddy out of the computer and disconnect the power and data cables from the drive.

   d. Remove the 2.5-inch hard drive caddy from the drive bay caddy by gently bending out the release tabs on the side of the caddy and lifting out the 2.5-inch hard drive caddy.

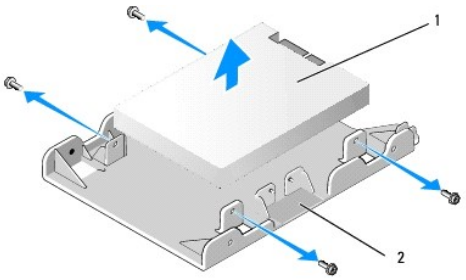


1	2.5-inch hard drive and 2.5-inch hard drive caddy	2	release tabs (2)
3	drive bay caddy		

e. The secondary 2.5-inch hard drive is mounted on the U-shaped side of the 2.5-inch hard drive caddy. Disconnect the power cable y-adapter from the secondary hard drive.

f. Remove the secondary drive from the caddy by removing the four retaining screws, two on each side of the drive.

6. Perform the procedure After Working on Your Computer.



1	secondary 2.5" hard drive	2	2.5-inch hard drive caddy

Installing a Secondary Hard Drive

NOTE: Secondary hard drives must be the same type of drive (3.5-inch or 2.5-inch) as the primary hard drive.

1. Unpack the replacement hard drive, and prepare it for installation. Use the documentation provided for the drive and configure it for your computer.

2. Perform the procedure Before Working on Your Computer.

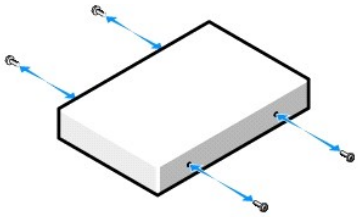
NOTE: Since the following steps do not require the complete removal of the optical drive and the floppy drive, it is not necessary to disconnect the cables connecting the two drives.

3. Remove the optical drive, if installed (see Optical Drive).

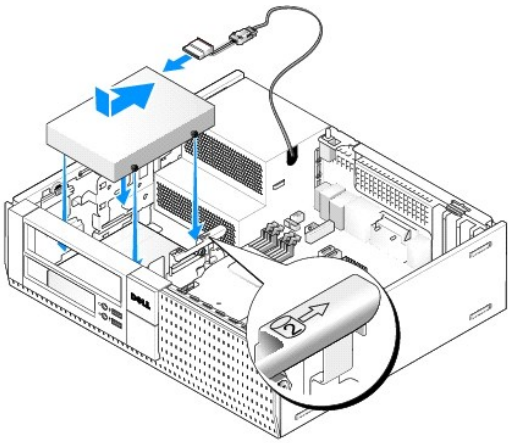
4. If the secondary drive is a 3.5-inch hard drive:

a. If a floppy drive or media card reader is installed, remove it and the data cables connected to it (see Removing a Floppy Drive or Removing a Media Card Reader). Install a drive bay insert into the bezel opening vacated by removing the drive (see Replacing Drive Bay Inserts).

b. Install four shoulder screws onto the hard drive, two on each side. Shoulder screws may be found on the inside of the drive bay insert or on a previously removed 3.5-inch hard drive.



c. Connect the P4 power cable to a power cable adapter, and connect the adapter to the hard drive.



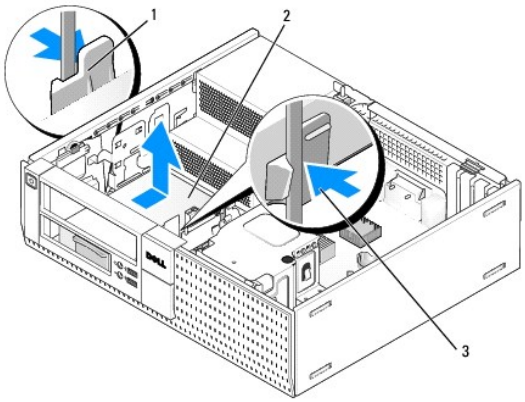
d. Connect the SATA data cable to the hard drive and to the SATA1 connector on the system board (see System Board Components).

e. Lower the hard drive into the floppy drive/media card reader bay. Slide the drive toward the back of the chassis until it locks into place.

5. If installing 2.5-inch hard drives as the secondary hard drive:

a. Press in on the two securing clips on each side of the drive bay caddy and slide the caddy towards the back of the computer.

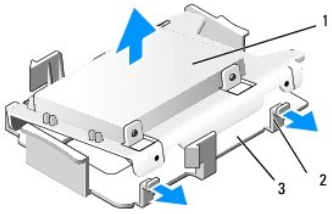
NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.



1	securing clips (2)	2	hard drive
3	hard drive bay caddy		

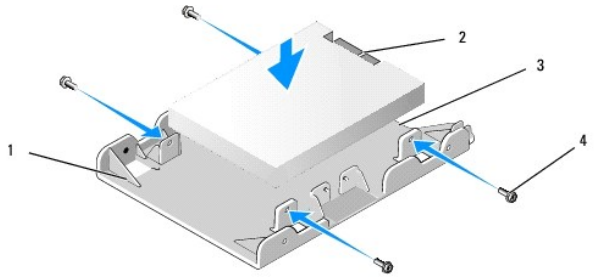
b. Lift the drive bay caddy out of the computer and disconnect the power and data cables from the drive(s).

c. Remove the 2.5-inch hard drive caddy from the drive bay caddy by gently bending out the release tabs on the side of the caddy and lifting out the 2.5-inch hard drive caddy.



1	2.5-inch hard drive and 2.5-inch hard drive caddy	2	release tabs (2)
3	drive bay caddy		

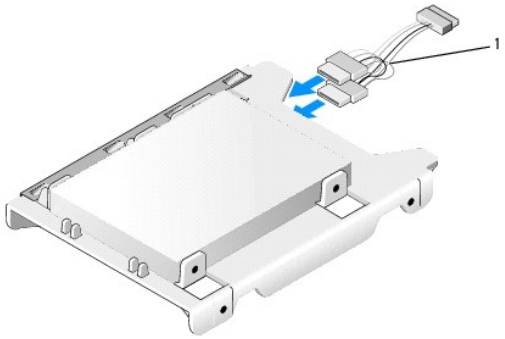
d. Position the secondary 2.5-inch hard drive onto the U-shaped side of the 2.5-inch hard drive caddy with the side of the drive with the label plate facing toward the caddy, and the connector end of the drive toward the end of the caddy with the cable cutout.



1	2.5-inch hard drive caddy, U-shaped side up	2	2.5-inch hard drive, connector end
3	cable cutout	4	screws (4)

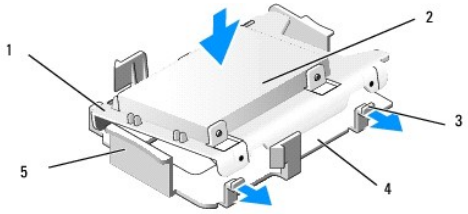
e. Secure the drive to the drive caddy with four screws, two on each side.

f. Attach the power cable y-adapter to the hard drives installed in the caddy.



1	power cable adapter

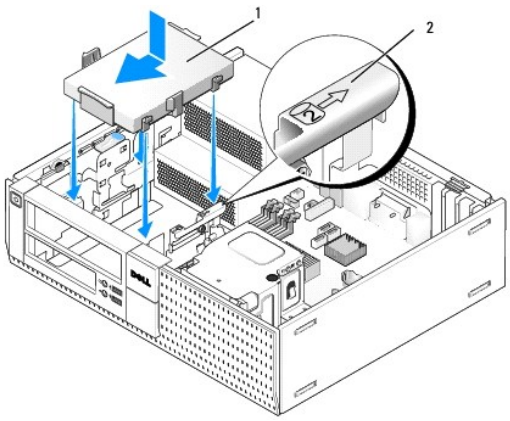
g. Install the 2.5-inch hard drive caddy into the drive bay caddy by gently bending out the release tabs on the side of the caddy and positioning the 2.5-inch drive caddy in the drive bay caddy. The pins inside the drive bay caddy should align with the holes on the sides of the 2.5-inch hard drive caddy, and the connector end of the hard drive should face the back of the drive bay caddy.



1	2.5" hard drive caddy	2	2.5" hard drive
3	release tabs (2)	4	drive bay caddy
5	drive bay caddy front		

h. Connect the power and data cables to the drives. Ensure that the data cable to the primary hard drive is connected to SATA0 on the system board, and the data cable to the secondary drive is connected to SATA1 (see System Board Components).

i. Lower the drive bay caddy into the drive bay and slide it forward until it clicks into place.



1	2.5-inch hard drive caddy in drive bay caddy	2	slot verification number

j. Replace the floppy drive or media card reader, if it was installed (see Installing a Floppy Drive, or Installing a Media Card Reader).

6. Route the hard drive power and data cables through cable channels and attach them to the cable bundle as needed.
7. Replace the optical drive, if it was installed (see Installing an Optical Drive).
8. Ensure that all cable connectors are properly seated and cables are routed through cable channels.
9. Perform the procedure After Working on Your Computer.
10. Reconnect power and I/O devices to the computer, as needed.
11. Perform the following:
    a. Turn on the computer.
    b. When the computer boots, press F2 to enter system **Setup** (see the *Dell™ Technology Guide* for more information).
    c. In the **Settings** menu, select Drives, and select Drives in the sub- menu.
    d. Enable the SATA1 port, if necessary. If any settings were changed, click Apply.
    e. Verify the that the SATA port information shown is correct.
    f. Insert a bootable medium into your boot drive.
    g. Click Exit.
12. When the computer starts, press **F12** when prompted to enter the **Boot Drive Menu**.
13. Select a bootable drive and continue.
14. When the operating system loads, partition and logically format your drive, if necessary.

    NOTE: For instructions, see the documentation that came with your operating system.

15. Test the hard drive by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- I/O Assembly

I/O Assembly

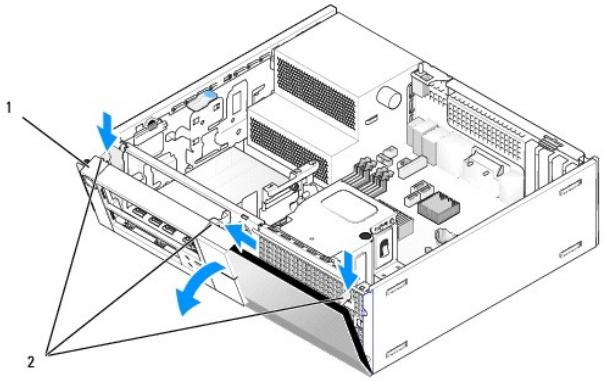
Removing the I/O Assembly

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

NOTE: Note the routing of all cables before disconnecting them, so that you can re route them correctly when installing the new I/O assembly.

1. Perform the procedure Before Working on Your Computer.
2. Remove the bezel by releasing the three securing tabs and rolling it away from the top edge of the computer.



1	bezel	2	securing tabs (3)

3. Remove the optical drive (see Removing an Optical Drive).
4. Disconnect the I/O assembly cables from the system board.

NOTICE: When sliding the I/O assembly out of the computer, be extremely careful. Carelessness may result in damage to the cable connectors and the cable routing clips.

5. Press the tab that secures the I/O assembly to the front panel, and gently move the I/O assembly away from the computer while guiding the I/O assembly cables out of the chassis.

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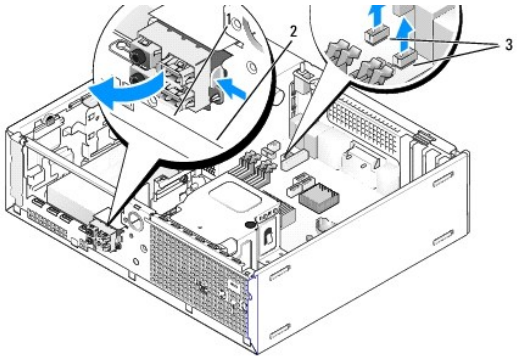


1	I/O assembly	2	securing tab
3	I/O assembly cables/connectors		

Replacing the I/O Assembly

To replace the I/O assembly, do the following:

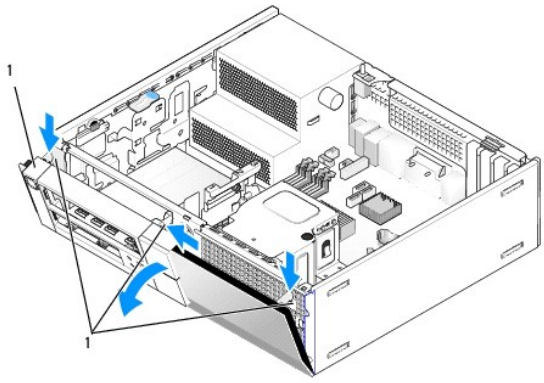
1. Perform the procedure Before Working on Your Computer.

   NOTE: Use the guides on the I/O assembly bracket to help position the I/O assembly in place, and use the notch on the I/O assembly bracket to help seat the panel.

2. Remove the bezel:

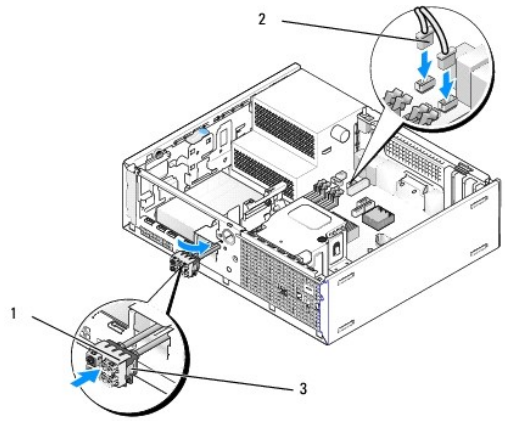
   a. Lift the three retention tabs to release the top edge of the bezel.

   b. Roll the bezel down and lift it from the chassis.



1	bezel	2	retention tabs (3)

3. Feed the I/O assembly cables into the front of the chassis through the opening for the I/O assembly until the assembly is in place. Ensure that the securing tab points toward the right (toward the grill).



1	I/O assembly	2	I/O assembly cables, connectors (2)
3	securing tab		

4. Push the I/O connector block into the I/O assembly opening until it snaps into place.
5. Plug the I/O assembly cable connectors into their system board connectors (see System Board Components).
6. Join the I/O assembly cables to the cable bundle routed through the middle of the chassis.
7. Replace the bezel.
8. Perform the procedure After Working on Your Computer).
9. Reboot your computer and exercise the I/O panel to ensure that it is working properly.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Power Supply

Power Supply

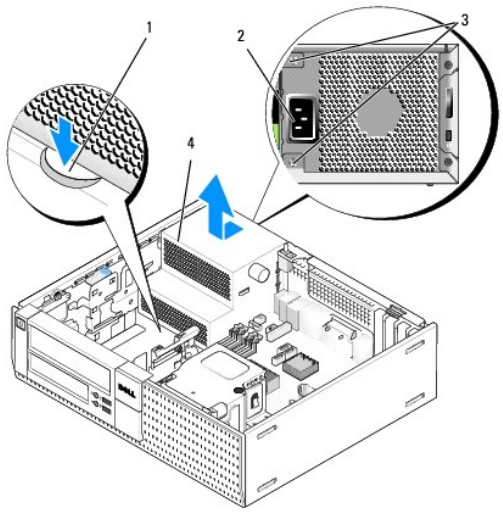
Replacing the Power Supply

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the DC power cables from the system board and the drives.

   Note the routing of the DC power cables underneath the tabs in the computer chassis as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent them from being pinched or crimped.
3. Remove the two screws that attach the power supply to the back of the computer chassis.
4. Remove the optical drive and carefully set it aside (see Optical Drive).
5. Press the release button located on the floor of the computer chassis.

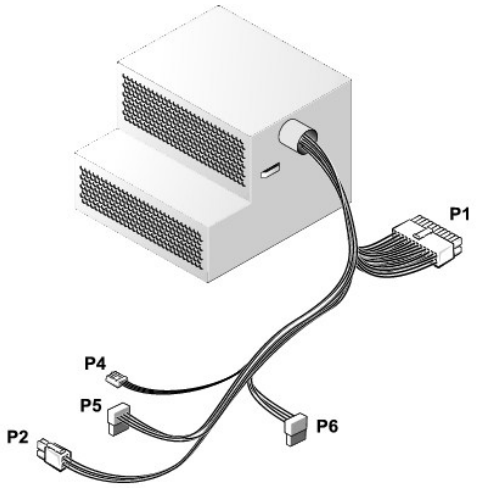


1	release button	2	AC power connector
3	screws (2)	4	power supply

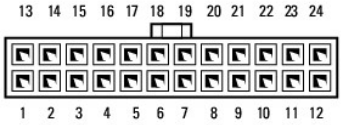
6. Slide the power supply toward the front of the computer approximately one inch.
7. Lift the power supply up and out of the computer.
8. Slide the replacement power supply into place.
9. Replace the screws that secure the power supply to the back of the computer chassis.
10. Reconnect the DC power cables.

11. Replace the optical drive (see Optical Drive).
12. Connect the AC power cable to the connector.
13. Perform the procedure After Working on Your Computer.

DC Power Connectors



DC Power Connector P1



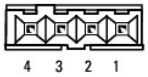
Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	GND	Black
4	+5 VDC	Red
5	GND	Black
6	+5 VDC	Red
7	GND	Black
8	PS_PWRGOOD*	Gray
9	P5AUX	Purple
10	+12 VDC	White
11	+12 VDC	White
12	+3.3 VDC	Orange
13	+3.3 VDC/SE	Orange
14	+12 VDC*	Blue
15	GND	Black
16	PWR_PS_ON*	Green
17	GND	Black
18	GND	Black
19	GND	Black
20	NC	NC
21	+5 VDC	Red
22	+5 VDC	Red

23	+5 VDC	Red
24	GND	Black
*Use 22-AWG wire instead of 18-AWG wire.		

DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connector P4



Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	GND	Black
3	GND	Black
4	+12 VDC	Yellow

DC Power Connector P5 and P6

Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VDC	Yellow

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Internal Speaker

Internal Speaker

Installing an Internal Speaker

The internal speaker is an optional device.

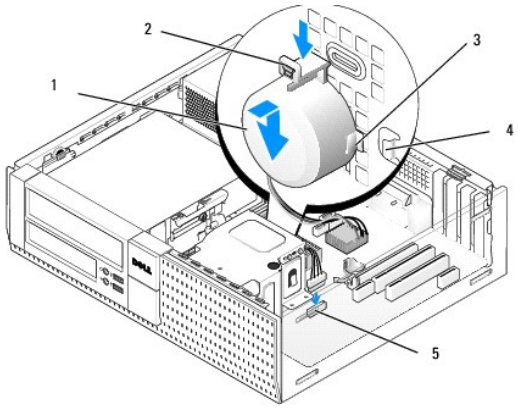
CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.

CAUTION: Disconnect your computer and all attached devices from their electrical outlets.

2. To mount the internal speaker, press the locking tab, position the speaker housing retention tabs under the grill retention tabs on the inside of the front panel, and release the locking tab.



1	speaker	2	locking tab
3	speaker housing retention tab (2)	4	grill retention tab (2)
5	system board speaker connector		

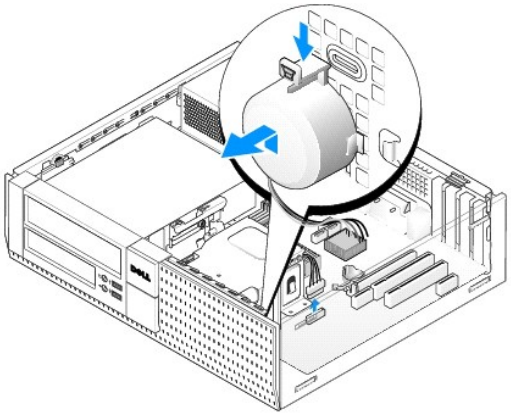
3. Connect the speaker cable to the system board (see System Board Components).
4. Perform the procedure After Working on Your Computer.
5. Boot the computer and check for acceptable speaker performance.

Removing an Internal Speaker

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the speaker cable from the system board.
3. To remove the internal speaker, press the locking tab, shift the speaker to move the speaker housing retention tabs out of the grill retention tabs, and lift the speaker from the chassis.



4. Perform the procedure After Working on Your Computer.

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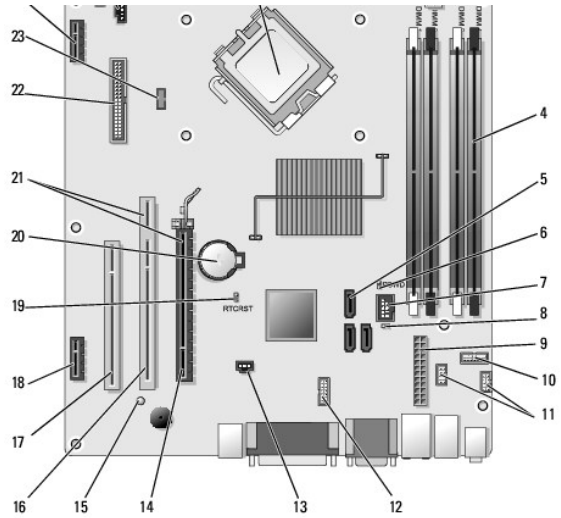
Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- System Board Components

System Board Components



1	fan connector (FAN_CPU)	2	processor connector (CPU)
3	processor power connector (12VPOWER)	4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, DIMM_4)
5	SATA drive connectors (3)	6	password jumper (PSWD)
7	internal USB connector (FLEX_USB)	8	Service Mode jumper (SERVICE_MODE)
9	power connector (POWER)	10	system status LEDs panel connector (FRONTPANEL)
11	I/O assembly connectors (2)	12	internal serial connector
13	intrusion switch connector (INTRUDER)	14	PCIe x16 connector (SLOT1)
15	auxiliary power LED (AUX_POWER)	16	PCI connector (SLOT2)
17	PCI connector (SLOT3)	18	PCIe x1 connector (SLOT4)
19	BIOS/RTC reset jumper pins	20	RTC battery socket (BATTERY)
21	connectors comprise riser interface (uses PCIe connector/SLOT1 and PCI connector/SLOT2)	22	floppy connector (DSKT2)
23	connector for optional internal speaker (INT_SPKR1)	24	connector for optional wireless card
25	front panel thermal sensor connector		

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Memory

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

You can increase your computer memory by installing memory modules on the system board.

Your computer supports DDR2 memory. For additional information on the type of memory supported by your computer, see the appropriate specifications for your system in this book.

DDR2 Memory Overview

- When installed in pairs, DDR2 memory modules should be of *matched memory size and speed*. If the DDR2 memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label on the upper-right or upper-left corner of the module to determine the module's capacity.

NOTE: Always install DDR2 memory modules in the order indicated on the system board.

The recommended memory configurations are:

- A pair of matched memory modules installed in DIMM connectors 1 and 2

or

- A pair of matched memory modules installed in DIMM connectors 1 and 2 and another matched pair installed in DIMM connectors 3 and 4

NOTICE: Do not install ECC memory modules.

- If you install mixed pairs of PC2-5300 (DDR2 667-MHz) and PC2-6400 (DDR2 800-MHz) memory, the modules function at the speed of the slowest module installed.
- Be sure to install a single memory module in DIMM connector 1, the connector closest to the processor, before you install modules in any other connector.

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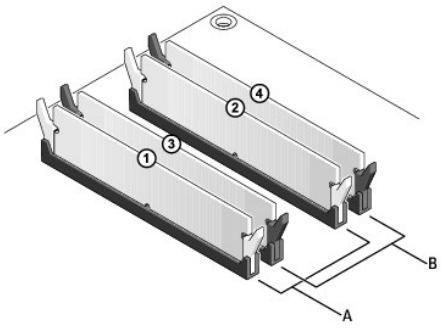


A	matched pair of modules in DIMM connectors 1 and 2 (white securing clips)	B	matched pair of memory modules in DIMM connectors 3 and 4 (black securing clips)

NOTICE: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, do not pair an original memory module with a new memory module. Otherwise, your computer may not start properly. You should install your original memory modules in pairs either in DIMM connectors 1 and 2 or DIMM connectors 3 and 4.

NOTE: Memory purchased from Dell is covered under your computer warranty.

Addressing Memory Configurations

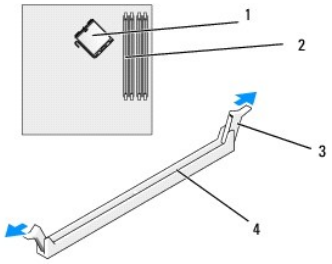
If you are using a 32-bit operating system such as Microsoft® Windows® Vista®, your computer will support a maximum of 4 GB of memory. If you are using a 64-bit operating system, your computer will support a maximum of 8 GB (2-GB DIMMs in each of the four slots) of memory.

Installing Memory

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

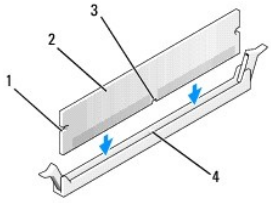
NOTICE: To avoid electrostatic discharge and damage to internal components, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Press out the securing clip at each end of the memory module connector.



1	processor	2	memory slots
3	securing clips (2)	4	system board memory slot

3. Align the notch on the bottom of the module with the crossbar in the connector.

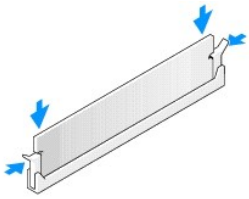


1	cutouts (2)	2	memory module
3	notch	4	crossbar in the connector

NOTICE: To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.

4. Insert the module into the connector until the module snaps into position.

   If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.



5. Perform the procedure After Working on Your Computer.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

6. Connect your computer and devices to electrical outlets, and turn them on.
7. When the message appears stating that memory size has changed, press <F1> to continue.
8. Log on to your computer.
9. Right-click the **My Computer** icon on your Windows desktop and click **Properties**.
10. Click the **General** tab.
11. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

Removing Memory

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To avoid electrostatic discharge and damage to internal components, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Press out the securing clip at each end of the memory module connector.
3. Grasp the module and pull up.

   If the module is difficult to remove, gently ease the module back and forth to remove it from the connector.

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Dell™ OptiPlex™ 960 Service Manual

Mini Tower Computer

Working on Your Computer
Inside View of Your Computer
System Board Components
Cover
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Cards
Drives
Processor
I/O Panel
Power Supply
Speakers
Battery
System Board
Memory
Troubleshooting Tips
Contacting Dell

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DCSM

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Cards

Cards

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

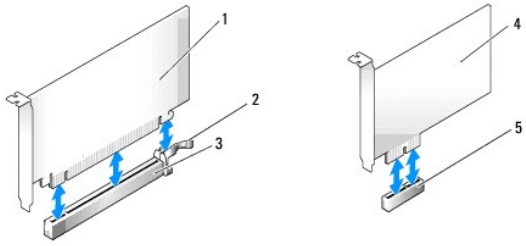
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets help to keep foreign objects out of your computer and help direct airflow for cooling.

Your Dell™ computer provides the following connectors for PCI and PCI Express (PCIe) cards:

- Two PCI card slots
- One PCIe x16 card slot
- One PCIe x1 card slot
- One connector for an internal wireless card

Installing a PCI or PCIe Card

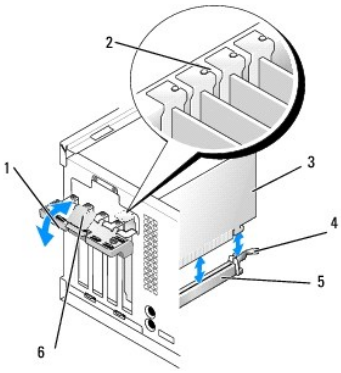


1	PCIe x16 card	2	release lever, securing tab (for PCIe cards)
3	PCIe x16 card slot	4	PCIe x1 card
5	PCIe x1 card slot		

NOTE: Your Dell computer uses only PCI and PCIe slots.

If you are replacing a card, uninstall the driver for the existing card. See the documentation that came with the card for instructions.

1. Perform the procedure Before Working on Your Computer.
2. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.

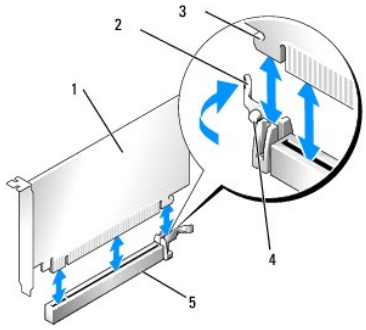


1	card retention latch	2	alignment guide
3	card	4	release lever, securing tab
5	card connector	6	release tab

3. If you are installing a new card, remove the filler bracket to create a card- slot opening. Then continue with step 5.
4. If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card.
5. If your card includes a securing slot, gently pull the release lever, grasp the card by its top corners, and ease it out of its connector.
6. Prepare the new card for installation.

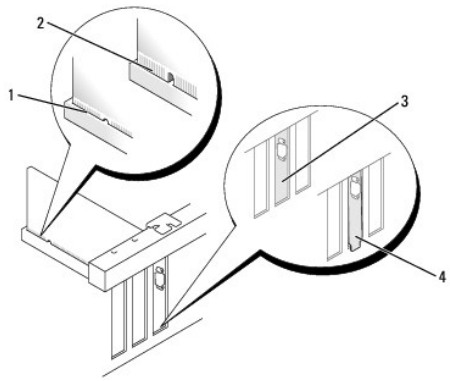
NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.



1	PCIe x16 card	2	release lever
3	securing slot (not all cards)	4	securing tab
5	PCIe x16 card connector		

7. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	filler bracket within slot	4	filler bracket caught outside of slot

8. Before you lower the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
9. Secure the card(s) by reseating the card retention latch and snapping it into place.

NOTICE: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

10. Connect any cables that should be attached to the card.

    See the documentation for the card for information about the card's cable connections.

11. Reseat the card retention latch.

12. Perform the procedure After Working on Your Computer.

13. If you installed a sound card:

    a. Enter system setup, select **Audio Controller**, and change the setting to **Off (s**ee the *Dell™ Technology Guide* for more information on system setup).

    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

14. If you installed an network adapter card and want to turn off the integrated network adapter:

    a. Enter system setup, select **Network Controller**, and change the setting to **Off**. (See the *Dell™ Technology Guide* for more information).

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

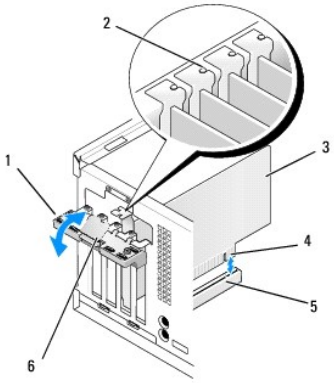
NOTICE: If you disable the integrated network adapter, you will not have AMT functionality.

15. Install any drivers required for the card as described in the card documentation.

Removing a PCI or PCIe Card

1. Perform the procedure Before Working on Your Computer.

2. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.



1	card retention latch	2	alignment guide
3	card	4	card-edge connector
5	card connector	6	release tab

3. If necessary, disconnect any cables connected to the card.

4. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets keep dust and dirt out of your computer and maintains the airflow that cools your computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

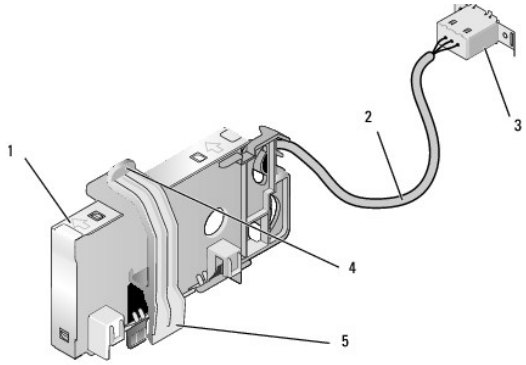
5. FPerform the procedure After Working on Your Computer.

6. Uninstall the card's driver. See the documentation that came with the card for instructions.

7. If you removed a sound card:
    a. Enter system setup, select **Audio Controller**, and change the setting to **On**. (See the *Dell™ Technology Guide* for more information).
    b. Connect external audio devices to the audio connectors on the back panel of the computer.
8. If you removed a network-adapter card connector:
    a. Enter system setup, select **Network Controller**, and change the setting to **On**. (See the *Dell™ Technology Guide* for more information).
    b. Connect the network cable to the integrated network connector on the back panel of the computer.

Internal Wireless Card - Installation

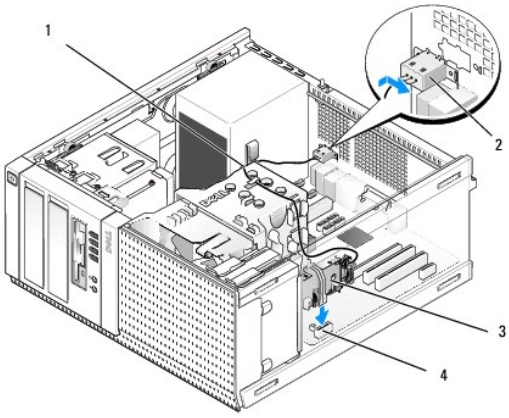
The internal wireless card is an optional device.



1	wireless card assembly	2	wireless card cable to antenna
3	Wi-Fi external antenna connector	4	card retention clasp release
5	card retention clasp		

To install the card, do the following:

1. Perform the procedure Before Working on Your Computer.
2. If installed, remove the filler plug covering the opening in the back panel for the Wi-Fi external antenna connector.
3. Locate the wireless card connector on the system board (see System Board Components).



1	wireless card cable	2	Wi-Fi external antenna connector
3	wireless card assembly	4	wireless card connector

4. Position the wireless card connector directly above the system board connector with cable edge of the card toward the back of the chassis.
5. Insert the wireless card connector into the system board connector until the card retention clasp catches the metal loop on the side of the chassis and holds the card securely in place.

NOTICE: When routing the wireless card cable through the chassis, avoid making sharp bends. This can cause signal degradation.

6. Route the wireless card cable through the cable guides on the top of the heatsink assembly, along the cable bundle for the front panel wiring, and through the cable clip on the side of the power supply.
7. Remove the plug on the back panel where the external connector for the Wi-FI antenna is installed.
8. Position the external antenna connector at the end of the wireless card cable in the antenna connector opening in the back panel so that the retaining tabs on the connector faceplate pass through the opening, and the bent end of the connector faceplate is pointed away from the power supply.
9. Slide the connector sideways along the back panel slightly so that the retaining tabs on the connector faceplate hold the connector to the back panel.
10. Connect the Wi-Fi external antenna to the wireless card cable connector.
11. Perform the procedure After Working on Your Computer.
12. Restart your computer. Setup the wireless device software as needed to support your wireless network.

Internal Wireless Card - Removal

To remove an internal wireless card do the following:

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the Wi-Fi external antenna from the connector on the back of the computer.
3. Disengage the Wi-Fi external antenna connector from the chassis by sliding it along the back panel toward the power supply, then withdrawing it from the opening.
4. Remove the wireless card cable from its routing path.
5. Grasp the wireless card assembly at the ends, press down the card retention clasp release and lift the card to unplug it from the system board wireless card connector. Remove the wireless card assembly from the chassis.
6. Close the opening for the Wi-Fi external antenna connector with the plug provided for the computer. Contact Dell for a replacement plug if none is available.
7. Perform the procedure After Working on Your Computer.

Installing a Second External Serial Port

If adding an external serial port using a serial connector mounted on a slot filler bracket, connect the internal cable of the connector to the internal serial port connector on the system board (see System Board Components).

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Chassis Intrusion Switch

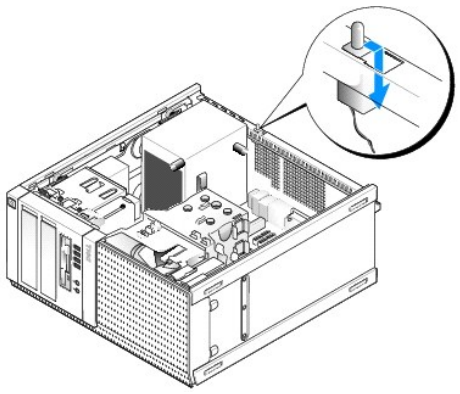
Chassis Intrusion Switch

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Chassis Intrusion Switch

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the chassis intrusion switch cable from the system board by using two fingers to squeeze the release mechanism on one side of the connector as you pull to disconnect the cable connector.
3. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

NOTE: You may feel a slight resistance as you slide the switch out of the slot.



Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until you feel it snap securely into place.
2. Reconnect the cable to the system board.
3. Perform the procedure After Working on Your Computer.

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F2> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.
3. In the **Settings** menu, select **Security**, then **Chassis Intrusion**. Use the **tab**, **arrow**, and **space bar** keys to choose the option you prefer. If you changed the setting, move to the **Apply** button and press **Enter**.

NOTE: The default setting is **On-Silent**.

4. Save your BIOS settings and exit system setup.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Mini Tower Computer Cover

Mini Tower Computer Cover

Removing the Mini Tower Computer Cover

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

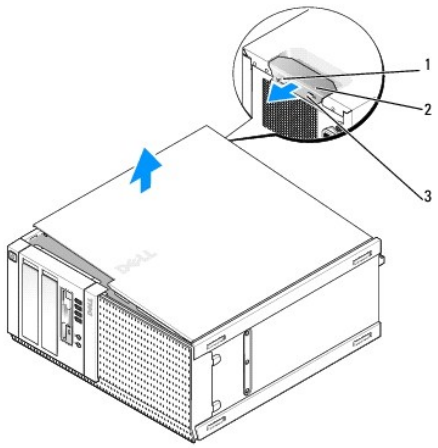
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Perform the procedure Before Working on Your Computer.
2. Lay the computer on its side as shown in the illustration.
3. If a security cable or a padlock (through the padlock ring) is attached, remove it.

NOTE: For convenience, lay the computer on its side before working inside the chassis.

4. Locate the cover release latch and slide it back as you lift the end of the cover near the latch.
5. With the cover end near the latch raised slightly, slide the cover toward the latch end of the chassis to pull the tabs at the other end of the cover out of the slots in the chassis.

CAUTION: Graphics card heatsinks can become very hot during normal operation. Ensure that a graphics card heatsink has had sufficient time to cool before you touch it.



1	padlock ring	2	cover release latch
3	security cable slot		

Replacing the Mini Tower Computer Cover

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

1. Ensure that all cables are connected, and fold cables out of the way.

Gently pull the power cables toward you so that they do not get caught underneath the drives.

2. Ensure that no tools or extra parts are left inside the computer.

3. To replace the cover:
   a. Align the bottom of the cover with the hinge tabs located along the bottom edge of the computer.
   b. Using the hinge tabs as leverage, rotate the cover downward to close it.
   c. Snap the cover into place by pulling back on the cover release latch and then releasing the latch when the cover is properly seated.
   d. Ensure that the cover is seated correctly before moving the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

4. Attach the computer stand (if applicable). For instructions, see the documentation that came with the stand.

5. Connect your computer and devices to electrical outlets, and turn them on.

   After you remove and replace the cover, the chassis intrusion detector (optional on some computers), if installed and enabled, causes the following message to appear on the screen at the next computer start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector by changing **Chassis Intrusio**n to **On** or **On-Silent**. See Resetting the Chassis Intrusion Detector.

NOTE: If an administrator password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Processor

Processor

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

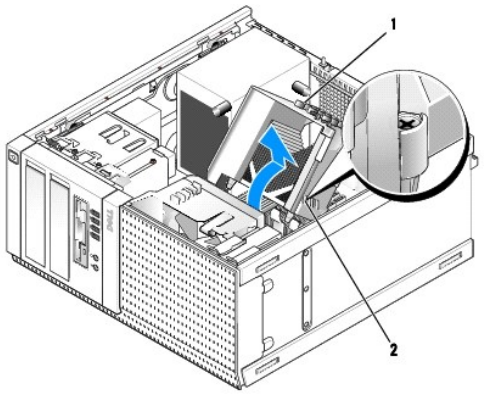
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the Heatsink Assembly

1. If cables are routed through the cable guides on the top or sides of the heatsink shroud, detach them and move them away from the heatsink assembly.
2. Loosen the two captive screws, one on the upper and one on the lower sides of the heatsink assembly.

CAUTION: Despite having a plastic shield, the heatsink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

3. Rotate the heatsink assembly upward from the front edge, and remove it from the computer.
   Lay the heatsink assembly upside down to avoid contaminating the thermal solution.



1	heatsink assembly	2	captive screw (2)

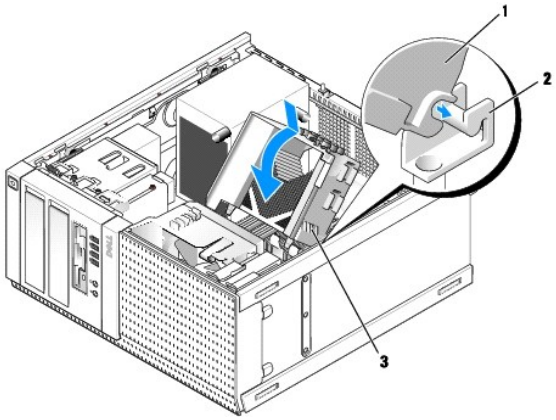
Replacing the Heatsink Assembly

1. Clean the thermal solution from the bottom of the heatsink.

NOTICE: Ensure that you apply new thermal solution. New thermal solution is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

2. Apply the new thermal solution to the top of the processor as needed.
3. Install the heatsink assembly:
   a. Place the heatsink assembly back onto the heat-sink assembly bracket.
   b. Rotate the heatsink assembly down towards the computer base.
   c. Tighten the two captive screws.

NOTICE: Ensure that the heatsink assembly is correctly seated and secure.



1	heatsink assembly	2	heat-sink assembly bracket
3	captive screw (2)		

4. Reroute cables removed earlier through the cable guides on the heatsink assembly. Reconnect them as needed.

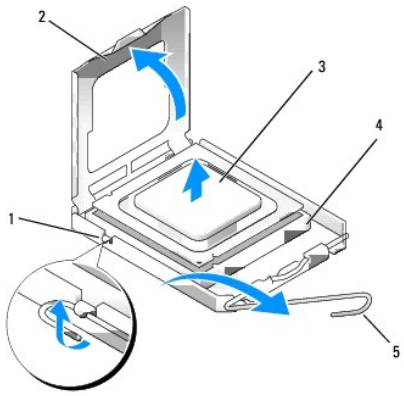
Removing the Processor

1. Perform the procedure Before Working on Your Computer.
2. Remove the heatsink assembly (see Removing the Heatsink Assembly).

NOTICE: Unless a different heatsink is required for the new processor, reuse the original heatsink assembly when you replace the processor.

3. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then, pull the lever back to release the processor.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.



1	center cover latch	2	processor cover
3	processor	4	socket
5	release lever		

4. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

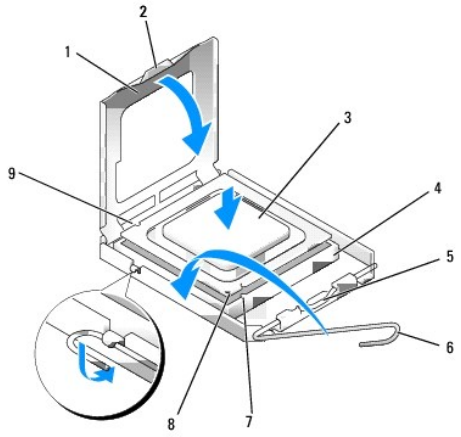
NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. FPerform the procedure Before Working on Your Computer.
2. Unpack the new processor, being careful not to touch the underside of the processor.

   NOTE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

3. If the release lever on the socket is not fully extended, move it to that position.
4. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
5. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

NOTICE: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

6. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
7. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.

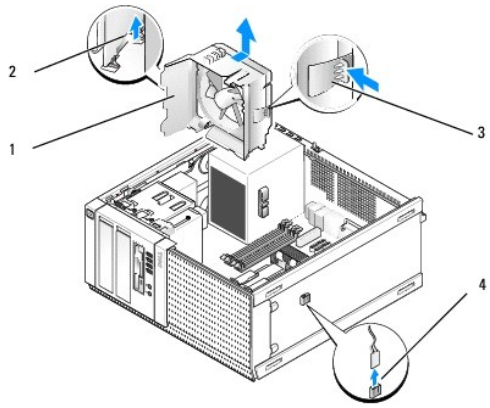
8. Pivot the socket release lever back toward the socket, and snap it into place to secure the processor.
9. Replace the heatsink assembly (see Replacing the Heatsink Assembly).
10. Perform the procedure After Working on Your Computer.

Remove the Fan Assembly

1. Perform the procedure Before Working on Your Computer.
2. Remove the heatsink assembly (see Removing the Heatsink Assembly).

3. Disconnect the fan cable from the system board (see System Board Components).

4. Lift (press up) the fan retention tab on the lower side of the fan assembly (toward the bottom of the computer) while pulling back (away from the chassis) the tab on the upper side of the fan assembly, and simultaneously sliding the assembly toward the back of the chassis to release it from the chassis.

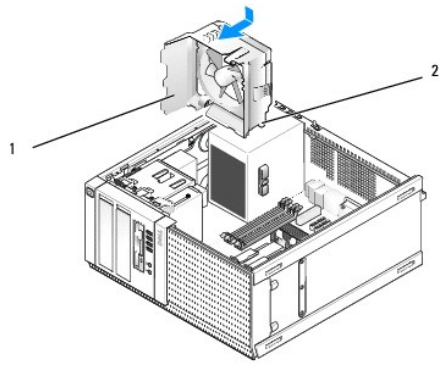


1	fan assembly	2	fan retention tab on upper side of fan assembly
3	fan retention tab on lower side of fan assembly	4	fan cable connector

5. Lift the fan assembly out of the chassis.

Replacing the Fan Assembly

1. Position the fan assembly in its mounting location such that slot retention tabs on the left side (bottom in picture) of the assembly are inserted into the slots in the left side of the chassis.



1	fan assembly	2	slot retention tab (4)

2. Push the fan toward the left side of the computer (down in picture), and slide it toward the front panel until it clicks into place.

3. Connect the fan cable to the system board (see System Board Components).

4. Replace the heatsink assembly (see Replacing the Heatsink Assembly).

5. Perform the procedure After Working on Your Computer.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

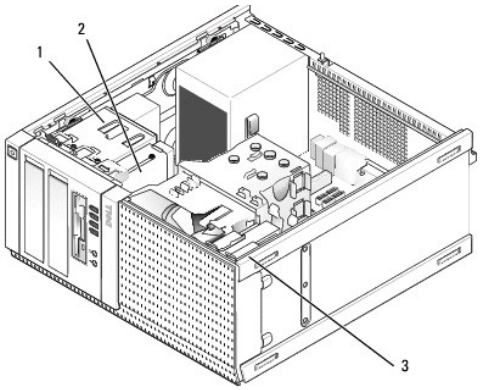
- Drives

Drives

NOTE: If you are removing or adding a device that affects the hardware or RAID configuration of the system, BIOS settings may need to be changed. Refer to the *Dell™ Technology Guide* for more information.

Your computer supports:

- Up to Two 3.5-inch or up two 2.5-inch SATA (Serial ATA) hard drives
- One 3.5-inch floppy drive or media card reader
- Two 5.25-inch SATA optical drives
- One eSATA drive (external, connector on back panel)



1	optical drive	2	3.5-inch drive or media card reader
3	hard drive		

General Installation Guidelines for SATA Devices

SATA connectors on the system board are labeled SATA0, SATA1, SATA2, and SATA3.

Hard drives must be connected to the lower numbered SATA connectors, while any other SATA devices (like an optical drive) must be connected to the remaining SATA connectors numbered higher than the one that the hard drive(s) is connected to. For example, if you have two SATA hard drives and one SATA optical drive, connect the two hard drives to the SATA0 and SATA1 connectors, and connect the SATA optical drive to the SATA2 connector. (See System Board Components for the location of SATA connectors on the system board.)

Connecting Drive Cables

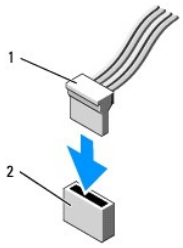
When you install a drive, you connect two cables—a DC power cable and a data interface cable—to the back of the drive.

Data Interface Connectors

SATA Connector

1	data interface cable connector	2	data interface connector

Power Cable Connectors

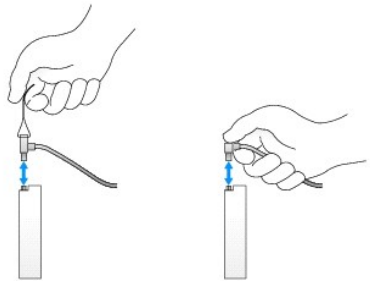


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing a cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

When connecting and disconnecting a cable without a pull tab, hold the cable by the black connector at each end.



Hard Drive

The OptiPlex 960 mini-tower chassis support either one or two 3.5-inch hard drives, or one or two 2.5-inch hard drives. If a single hard drive is installed, it may be a 3.5-inch or 2.5-inch hard drive. When installing a second hard drive, the hard drive being installed must be he same type (3.5-inch or 2.5-inch) as the drive in the chassis.

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

NOTICE: When handling 2.5-inch hard drives, avoid pressing on the metal side (drive label). This can cause serious damage to the drove.

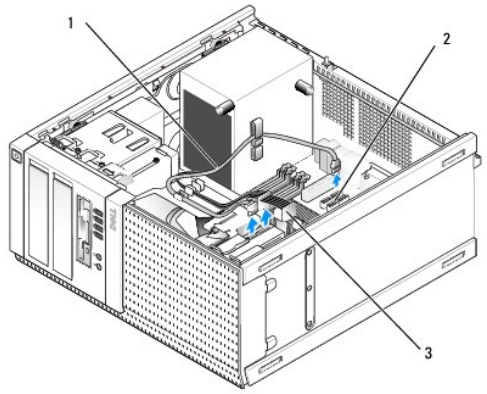
NOTE: For systems configured for RAID operation, removing or adding a drive may affect the RAID configuration. Refer to the *Dell™ Technology Guide* for more information.

Removing a Hard Drive

The drive to be removed may be a 3.5-inch hard drive installed in the upper drive bay or lower drive bay, or 2.5-inch hard drive in the upper bay, and may be a primary drive or secondary drive.

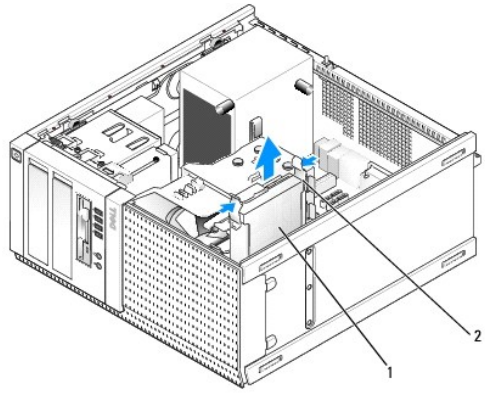
The upper drive bay always contains the primary hard drive, and, if a drive is installed in the lower drive bay, it is always configured as a secondary hard drive. When two 2.5-inch hard drives are installed in the system (as primary and secondary drives), both are mounted on the same 2.5-inch hard drive caddy and it is installed in the upper drive bay.

1. If you are removing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Perform the procedure Before Working on Your Computer.
3. Disconnect the power cables from the drive(s) in the bay holding the drive being removed. If removing a 2.5-inch hard drive, disconnect the power cable from the power cable adapter.
4. Disconnect the data cable(s) from the hard drive(s) in the in bay the containing the drive being removed.



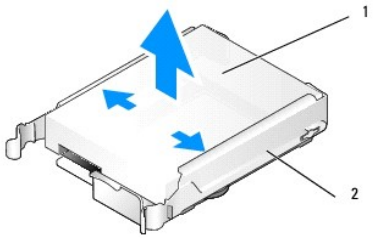
1	data cable	2	hard drive system board connector
3	power cable		

5. Remove the drive bay caddy holding of the drive by pressing in the blue release tabs on each side of the caddy and sliding the caddy up and out of the computer.



1	hard drive(s)	2	release tabs (2)

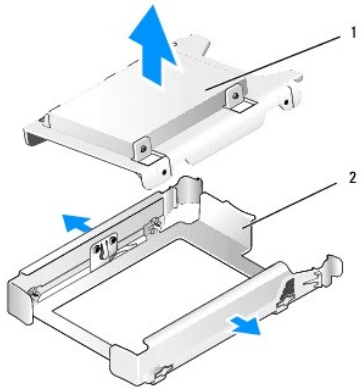
6. If the drive being removed is a 3.5-inch hard drive, remove it from the drive bay caddy by gently bending out the sides of the drive bay caddy to free the drive.



1	hard drive or 2.5-inch hard drive caddy	2	drive bay caddy

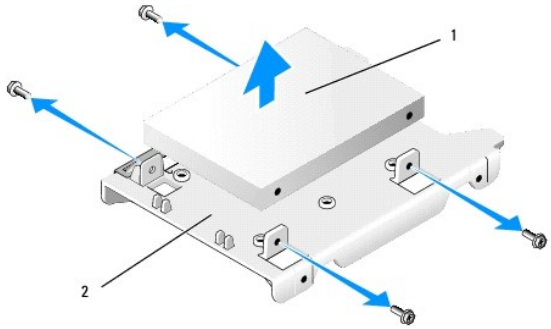
7. If the drive being removed is a 2.5-inch hard drive:

   a. Remove the 2.5-inch hard drive caddy from the drive bay caddy by gently bending out the sides of the drive bay caddy lifting out the hard drive caddy.



1	hard drive or 2.5-inch hard drive caddy	2	drive bay caddy

   b. Detach the hard drive to be removed from the 2.5-inch hard drive caddy by removing the four screws, two on each side, that secure it to the caddy. The primary hard drive is mounted on the flat side of the 2.5-inch hard drive caddy, and the secondary hard drive is mounted on the U-shaped side.



1	2.5-inch hard drive mounted as the primary drive	2	2.5-inch hard drive caddy

8. If a primary hard drive was removed and is not being replaced, and a secondary drive is installed, move the secondary hard drive into the primary hard drive position:

   a. If the secondary hard drive is a 3.5-inch hard drive (in the lower drive bay), disconnect the cables from the secondary drive, move the lower drive bay caddy to the upper drive bay, connect the power cable and SATA0 data cable to the drive.

   b. If the primary hard drive is a 2.5-inch hard drive, unmount the secondary hard drive from the U-shaped side of the 2.5-inch hard drive caddy and remount it on the flat side of the caddy (see Replacing a Hard Drive).

      Install the 2.5-inch hard drive caddy into the drive bay caddy, and place it in the upper drive bay.

   c. Replace the computer cover.

   d. Reconnect your computer to power and other I/O devices as needed.

   e. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).

f. On the **Settings** menu, select Drives, and select Drives on the sub-menu**.**

g. Disable the SATA port for the secondary hard drive (normally SATA1).

h. Click **Apply**, then **Exit**.

i. If the new primary hard drive is a bootable drive, skip the rest of this step.

j. Insert a bootable medium into a boot drive.

k. Reboot your computer and press **F12** when prompted to enter the **Boot Device Menu**.

l. Select the drive with the bootable media and press Next.

m. Format and/or install bootable software on the primary hard drive.

Replacing a Hard Drive

If a single hard drive is installed, it may be a 3.5-inch or 2.5-inch hard drive. When installing a second hard drive, the hard drive being installed must be he same type (3.5-inch or 2.5-inch) as the drive in the chassis.

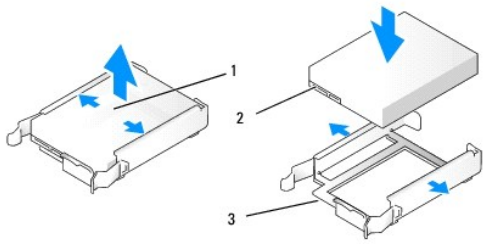
CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

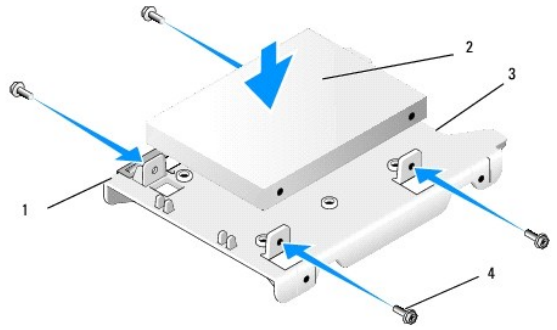
NOTICE: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

1. Perform the procedure Before Working on Your Computer.
2. Unpack the replacement hard drive, and prepare it for installation.
3. Check the documentation for the drive to verify that it is configured for your computer.
4. Remove the drive bay caddy for the drive to be installed. Primary hard drives must be installed in the upper drive bay. If a second 2.5-inch hard drive is installed, it is mounted on a 2.5-inch hard drive caddy with the primary drive in the upper drive bay.
5. If installing a 3.5-inch hard drive, gently spread the sides of the drive bay caddy and slide the hard drive into the caddy, aligning the screw holes on the side of the drive with the pins inside the caddy. The connector end of the hard drive must be toward the cable cutout end of the drive bay caddy.

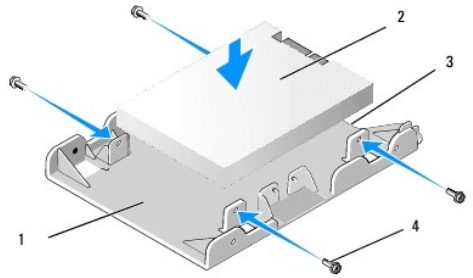


1	3.5" hard drive	2	hard drive connectors
3	drive bay caddy, cable cutout end		

6. If installing a 2.5-inch hard drive:
   a. Position the new hard drive into the 2.5-inch hard drive caddy. If the hard drive being installed is the primary hard drive, install the drive on the flat side of the caddy, with the label plate facing away from the caddy. If the 2.5-inch hard drive being installed is the secondary hard drive, install the drive on the U-shaped side of the caddy, with the label plate toward the caddy. Whether installing a primary or secondary 2.5-inch hard drive, always orient the drive so that the connector end is toward the end of the caddy with the cable cutout.



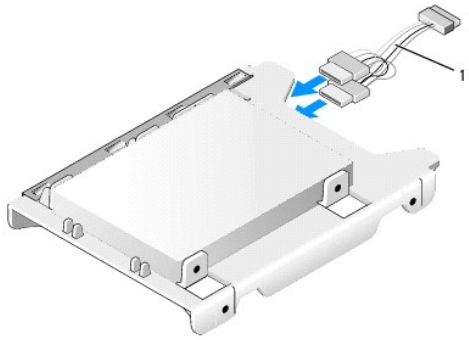
1	2.5-inch hard drive caddy (flat side up)	2	2.5-inch hard drive (primary drive shown)
3	end of caddy with cable cutout	4	screws (4)



1	2.5-inch hard drive caddy (U-shaped side up)	2	2.5-inch hard drive (secondary drive shown)
3	end of caddy with cable cutout	4	screws (4)

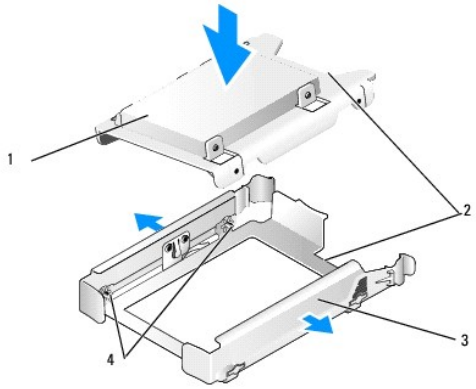
b. Secure the drive to the drive caddy with four screws, two on each side.

c. Connect a power cable y-adapter to the hard drive(s) installed in the caddy.



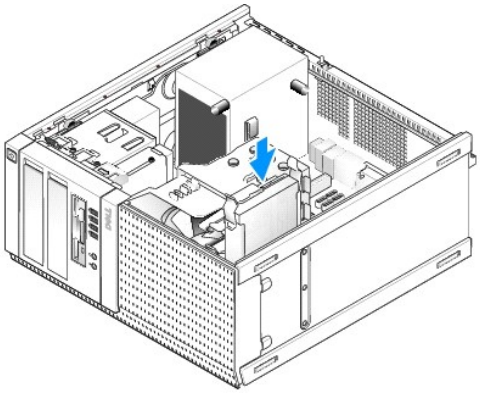
1	power cable adapter		

d. Install the 2.5-inch hard drive caddy into the drive bay caddy with the U-shaped side toward the inside of the drive bay caddy. The pins inside the drive bay caddy should align with the holes on the sides of the 2.5-inch hard drive caddy, with the cable cutouts of both caddies at the same end.



1	2.5-inch hard drive and caddy (shown with primary drive)	2	cable cutouts
3	drive bay caddy	4	pins (2 on each side)

7. Carefully slide the drive bay caddy into the drive bay until it snaps into place. If the drive bay caddy contains the primary hard drive, insert the caddy into the upper-most bay.



8. Connect the power and data cables to the drive(s).

NOTICE: Always connect the primary hard drive data cable to the SATA0 connector on the system board. A secondary hard drive data cable should be connected to the SATA1 connector.

9. Check the drive cabling to ensure that the cables are attached to the correct connectors, and the connectors are fully seated.
10. Secure the hard drive data and power cables to the cable guides on the heatsink assembly.
11. Perform the procedure After Working on Your Computer.
12. Reboot the computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide* for more information).
    a. In the **Settings** menu, select Drives, and select Drives on the sub- menu.
    b. Enable the SATA port for the drive installed, if necessary.
    c. Verify that the SATA port device information presented is correct.
    d. Click **Apply**, then **Exit**.
13. If the drive you just installed is the primary drive with no bootable system:
    a. Insert bootable media into a boot drive.
    b. Reboot the system and press **F12** when prompted to enter the **Boot Device Menu**.
    c. Select the boot device with the bootable media and press Next.
14. Partition and logically format your drive, if necessary.

Refer to documentation for your operating system for instructions.

15. Test the hard drive by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

16. If the drive you just installed is the primary drive, install a bootable operating system onto the drive, if necessary.

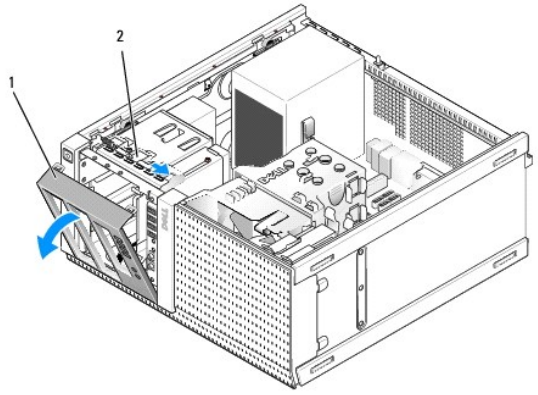
Remove the Drive Bezel

To remove the drive bezel:

1. Slide the drive release latch toward the bottom of the computer to release the bezel.

2. Rotate the bezel away from the right side of the chassis.

3. Lift it from the tab-slot hinge on the left side of the drive bays.



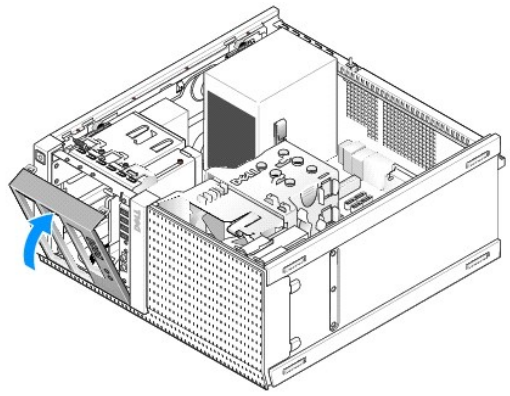
1	drive bezel	2	drive release latch

Replace the Drive Bezel

To replace the drive bezel:

1. Inserting the tabs on its left edge of the bezel into the slots to the left of the drive bays.

2. Rotate it onto the front panel until it snaps into place.



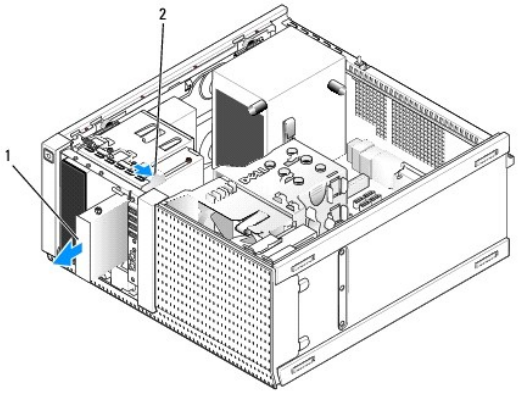
Floppy Drive

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing the Floppy Drive

1. If the floppy drive you are removing will not be replaced:
   a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).
   b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**
   c. Choose the option to **Disable** the floppy drive.
   d. Click **Apply**, then **Exit**.
   e. Reboot your computer and power it off.
2. Perform the procedure Before Working on Your Computer.
3. Disconnect the power and data cables from the back of the floppy drive.
4. Remove the drive bezel (see Remove the Drive Bezel).
5. Slide the sliding plate lever towards the bottom of the computer and slide the floppy drive out of the computer.

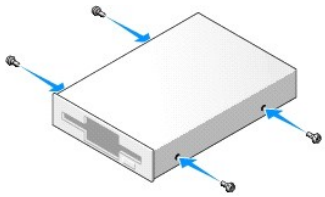


1	floppy drive	2	drive release latch

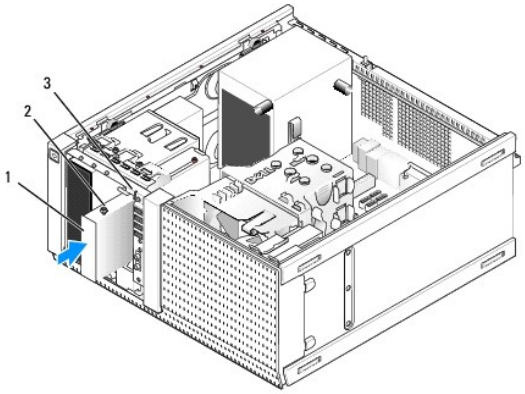
6. If you are not installing another device into the floppy drive bay, do the following:
   a. Remove the shoulder screws from the floppy drive you removed and attach them to the back of a 3.5" drive bay bezel insert. Attach the drive bezel insert to the drive bezel.
   b. Install a 3.5" drive bay insert onto the front panel.
   c. Replace the drive bezel (see Remove the Drive Bezel).
   d. Perform the procedure After Working on Your Computer.

Replacing or Installing the Floppy Drive

1. Perform the procedure Before Working on Your Computer.
2. If you are replacing a floppy drive, remove the shoulder screws from the old drive and attach them the new drive.
3. If you are installing a floppy drive into an a previously unused 3.5" drive bay, do the following:
   a. Remove the drive bezel (see Remove the Drive Bezel).
   b. Remove the floppy drive bay insert from the drive bezel.
   c. Remove the shoulder screws from the 3.5" drive bay insert and attach them to the new drive.
   d. Remove the drive bay insert for the 3.5-inch drive bay, if installed.



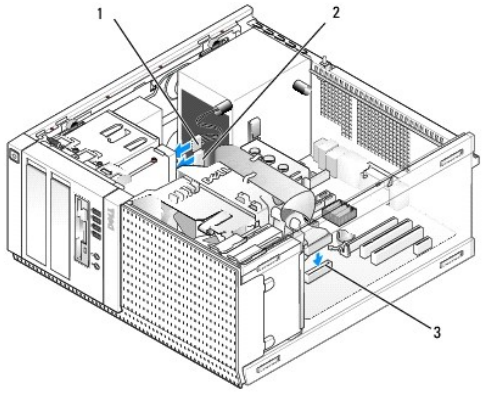
4. Align the shoulder screws on the floppy drive with the shoulder screw slots, and gently slide it into the bay until it clicks into place.



1	floppy drive	2	shoulder screws (4)
3	shoulder screw slots (2)		

5. Replace the drive bezel (see Remove the Drive Bezel).

6. Attach the data cables to the floppy drive and to the system board. Route the data cable through the cable guides on the fan shroud. Attach the power cable to the drive.



1	data cable	2	power cable
3	floppy drive connector (DSKT)		

7. FPerform the procedure After Working on Your Computer.

8. If you are adding a floppy drive to the computer system:

   a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).

   b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**

   c. Choose the option to **Enable** the floppy drive.

   d. Click **Apply**, then **Exit**.

   e. Reboot your computer.

9. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

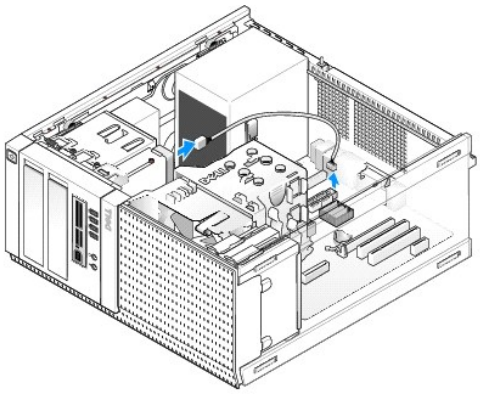
Media Card Reader

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing the Media Card Reader

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the power and data cable from the back of the media card reader.



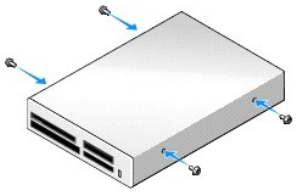
3. Remove the drive bezel (see Remove the Drive Bezel).
4. Slide the drive release latch toward the base of the computer and remove the media card reader from the computer.
5. If you are not installing another device into the media card reader bay, do the following:
   a. Remove the shoulder screws from the media card reader you removed and attach them to the back of a 3.5" drive bay bezel insert. Attach the drive bezel insert to the drive bezel.
   b. Install a 3.5" drive bay insert onto the front panel.
   c. Replace the drive bezel (see Replace the Drive Bezel).
   d. Perform the procedure After Working on Your Computer).

Installing the Media Card Reader

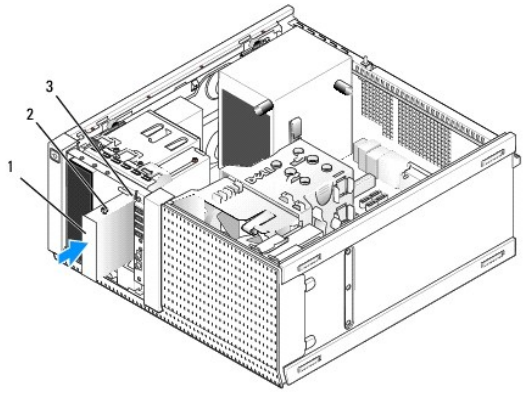
1. Perform the procedure Before Working on Your Computer.
2. If you are replacing a media card reader, remove the shoulder screws from the existing drive and attach the screws to the replacement media card reader.

   NOTE: If you are replacing an existing floppy drive with a media card reader, ensure you disable the floppy before installing the media card reader. Boot your computer and enter system setup (see the Dell™ Technology Guide). Use the **Diskette Drive** option to disable the floppy drive. Follow instructions in Removing the Floppy Drive.

3. If you are installing a media card reader into an a previously unused 3.5" drive bay, do the following:
   a. Remove the drive bezel (see Remove the Drive Bezel).
   b. Remove the drive bay insert for the 3.5-inch drive bay, if installed.
   c. Remove the 3.5" drive bay bezel insert from the drive bezel.
   d. Remove the shoulder screws from the 3.5" drive bay bezel insert and attach them to the new media card reader.



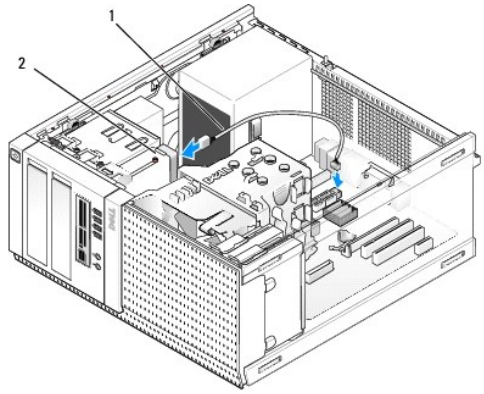
4. Align the shoulder screws on the media card reader with the shoulder screw slots, and gently slide it into the bay until it clicks into place.



1	media card reader	2	shoulder screws (4)
3	shoulder screw slots (2)		

5. Replace the drive bezel (see Replace the Drive Bezel).

6. Attach the power and data cable to the media card reader and to internal USB connector on the system board (see System Board Components).



1	data/power cable	2	media card reader

7. Perform the procedure After Working on Your Computer).

8. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

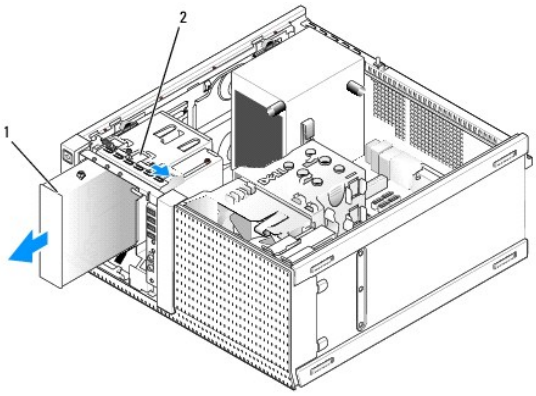
Optical Drive

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before replacing the cover.

Removing an Optical Drive

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the power and data cables from the back of the drive.
3. Remove the drive bezel (see Remove the Drive Bezel).
4. Slide the drive release latch toward the base of the computer and remove the optical drive from the computer.

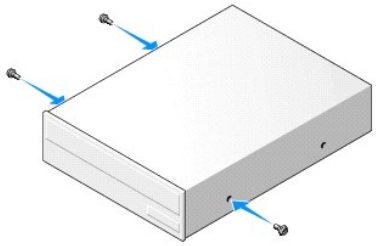


1	optical drive	2	drive release latch

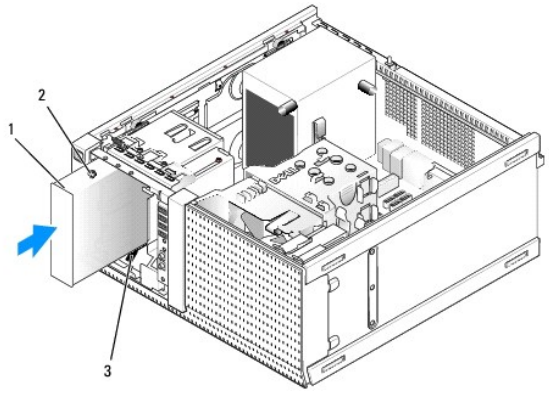
5. If you are not installing another device into the optical drive bay, do the following:
   a. Remove the shoulder screws from the optical drive you removed and attach them to the back of an optical drive bay bezel insert. Attach the drive bezel insert to the drive bezel.
   b. Install an optical drive bay insert onto the front panel, if available.
   c. Replace the drive bezel (see Replace the Drive Bezel).
   d. Perform the procedure After Working on Your Computer).

Replacing or Installing an Optical Drive

1. Perform the procedure Before Working on Your Computer.
2. If you are replacing an optical drive, remove the shoulder screws from the existing drive and attach them to the replacement drive.
3. If you are installing an optical drive into an a previously unused optical drive bay, do the following:
   a. Remove the drive bezel (see Remove the Drive Bezel).
   b. Remove the drive bay insert for the optical drive bay, if installed.
   c. Remove the optical drive bay bezel insert from the drive bezel.
   d. Remove the shoulder screws from the optical drive bay bezel insert and attach them to the new drive.



4. Check the documentation provided for the drive to verify that the drive is configured for your computer.
5. Align the shoulder screws on the optical drive with the shoulder screw slots, and slide the drive into the bay until it clicks into place.

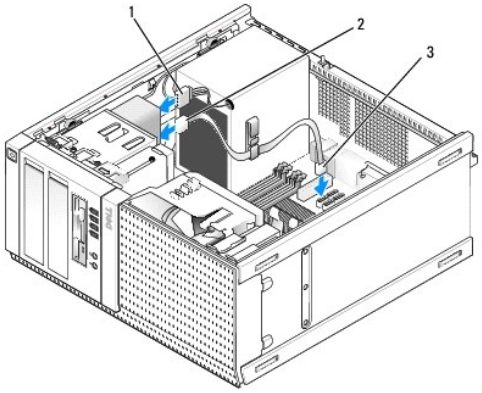


1	optical drive	2	shoulder screws (3)
3	shoulder screw slots (2)		

6. Replace the drive bezel (see Remove the Drive Bezel).

7. Connect the power and data cables to the drive and to the system board.

Always connect the optical drive SATA cable to a system board SATA connector that is labeled with a number higher than those connected to any hard drives installed in the computer.



1	power cable	2	data cable
3	SATA optical drive connector		

8. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

9. FPerform the procedure After Working on Your Computer.

10. Update your configuration information in system setup by setting the appropriate **Drive** option (SATA-1, SATA-2, or SATA-3) under **Drives**. (See the *Dell™ Technology Guide*.)

11. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

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I/O Assembly

Removing the I/O Assembly

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

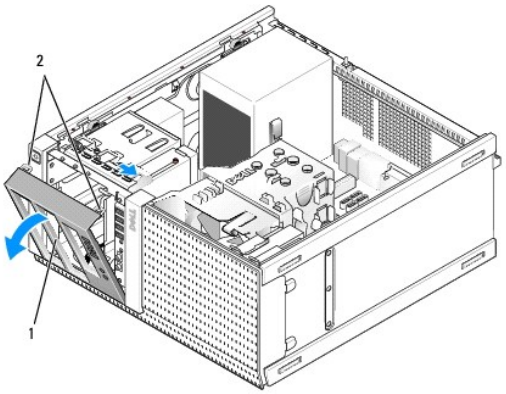
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

NOTE: Note the routing of all cables as you remove them so that you can re-route them correctly when installing the new I/O assembly.

1. Perform the procedure Before Working on Your Computer.

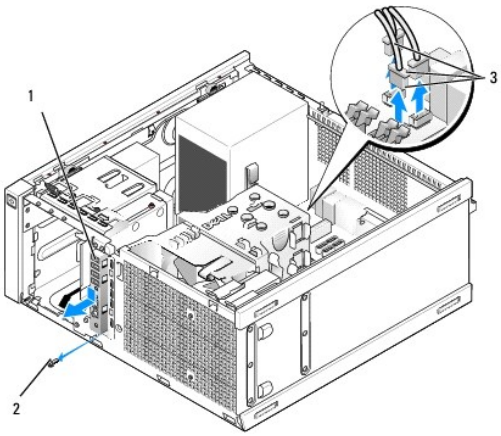
NOTICE: When sliding the I/O assembly out of the computer, be extremely careful. Carelessness may result in damage to the cable connectors and the cable routing clips.

2. Remove the drive bezel (see Remove the Drive Bezel).



1	drive bezel	2	drive bezel securing tabs (2)

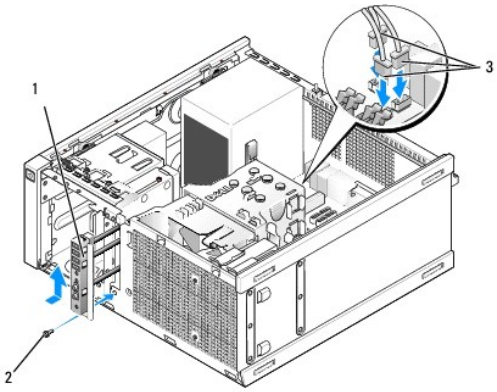
3. Remove the optical drive in the upper most bay, if installed (see Optical Drive).
4. Remove the drive bay caddy located in the lower most bay, if installed (see Replacing a Hard Drive).
5. Remove the bezel (see Remove the Bezel).
6. Disconnect the I/O assembly cables from the system board and release them from the cable bundle and guides.
7. Remove the screw that secures the I/O assembly, then push the I/O assembly toward the left side of the chassis (down) to release it from the retaining clips.
8. Slide the I/O assembly away from the front of the computer while carefully routing the cables out of the chassis.



1	I/O assembly	2	securing screw
3	I/O assembly cable connectors		

Replacing the I/O Assembly

1. Perform the procedure Before Working on Your Computer.
2. Remove the drive bezel, if installed (see Remove the Drive Bezel).
3. Remove the bezel, if installed (see Remove the Bezel).
4. Feed the I/O assembly cables into the front of the chassis through the opening for the I/O assembly until the assembly is in place. Ensure that the tabbed end of the assembly points toward the left (down) side of the computer.



1	I/O assembly	2	securing screw
3	I/O assembly cable connectors		

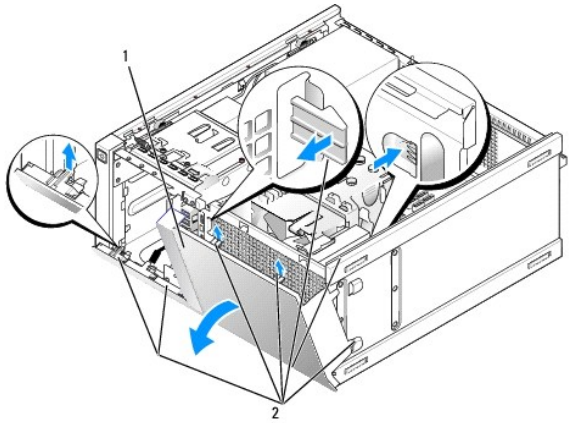
NOTE: Use the guides on the I/O assembly bracket to help position the I/O assembly in place, and use the notch on the I/O assembly bracket to help seat the panel.

5. With the I/O assembly positioned in the opening and flush with the front panel of the chassis, slide it toward the left side of the computer (down) fully, then slide it toward the right side of the computer (up) until it slips into place. The hole in the tabbed end of the assembly should align with the screw hole in the front of the chassis.
6. Install a screw through the tab and into the front panel to secure the assembly to the chassis.
7. Plug the I/O assembly cable connectors into their system board connectors (see System Board Components).
8. Join the I/O assembly cables to the cable bundle routed through the middle of the chassis.
9. Replace the bezel (see Replace the Bezel).

10. Replace the optical drive, if removed earlier (see Replacing or Installing an Optical Drive).
11. Replace the drive bay caddy.
12. Replace the drive bezel (see Replace the Drive Bezel).
13. Perform the procedure After Working on Your Computer.
14. Reboot your computer and exercise the I/O panel to ensure that it is working properly.

Remove the Bezel

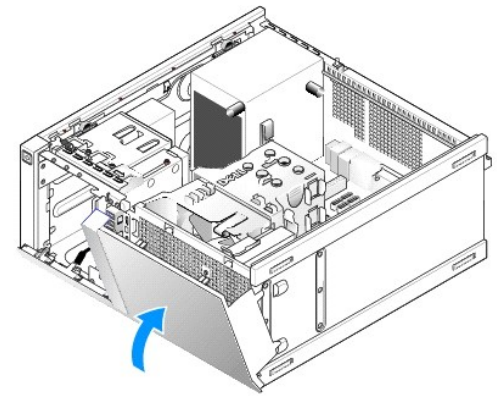
1. Perform the procedure Before Working on Your Computer.
2. Release the seven securing tabs located behind the bezel
3. Roll the bezel away from the right (upper) side of the computer.
4. Lift the bezel out of the tab and slot hinge on the left side (down) of the computer.



1	front bezel	2	front bezel tabs (7)

Replace the Bezel

To replace the bezel, insert the hooks at the left side (bottom) of the bezel into the slots provided at the base of the chassis, and rotate the bezel toward the chassis until it snaps into place.



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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Power Supply

Power Supply

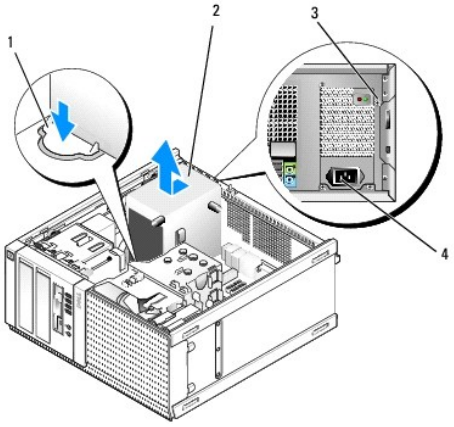
Replacing the Power Supply

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the DC power cables from the system board and the drives.

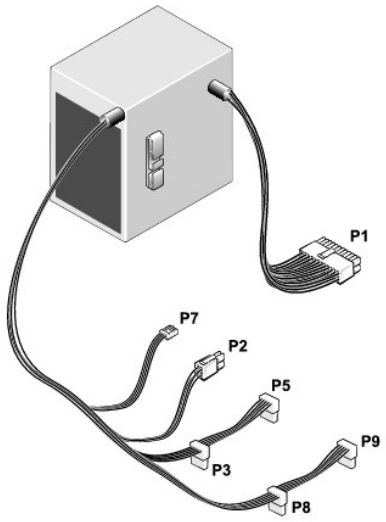
   Note the routing of the DC power cables underneath the tabs in the computer chassis as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent them from being pinched or crimped.
3. Remove the four screws that attach the power supply to the back of the computer chassis.
4. Press the release button located on the front side of the power supply.



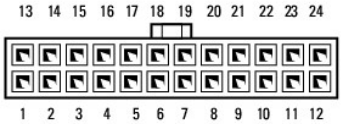
1	release button	2	power supply
3	screws (4)	4	AC power connector

5. Slide the power supply toward the front of the computer by approximately 1 inch.
6. Lift the power supply up and out of the computer.
7. Slide the replacement power supply into place.
8. Replace the screws that secure the power supply to the back of the computer chassis.
9. Connect the DC power cables to the system board.
10. Connect the AC power cable to the AC power connector.
11. Perform the procedure After Working on Your Computer.

DC Power Connectors



DC Power Connector P1



Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	GND	Black
4	+5 VDC	Red
5	GND	Black
6	+5 VDC	Red
7	GND	Black
8	PS_PWRGOOD	Gray
9	P5AUX	Purple
10	V_12P0_DIG	White
11	V_12P0_DIG	White
12	+3.3 VDC	Orange
13	+3.3VDC/SE*	Orange
14	-12 VDC	Blue
15	GND	Black
16	PWR_PS_ON	Green
17	GND	Black
18	GND	Black
19	GND	Black
20	NC	NC
21	+5 VDC	Red
22	+5 VDC	Red
23	+5 VDC	Red
24	GND	Black
*Optional wire. Use 22-AWG wire instead of 18-AWG wire.		

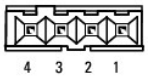
DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VADC	Yellow
4	+12 VADC	Yellow

DC Power Connectors P3, P5, P8, and P9

Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VBDC	White

DC Power Connector P7



Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	GND	Black
3	GND	Black
4	+12 VDC	Yellow

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Internal Speaker

Internal Speaker

Installing an Internal Speaker

The internal speaker is an optional device.

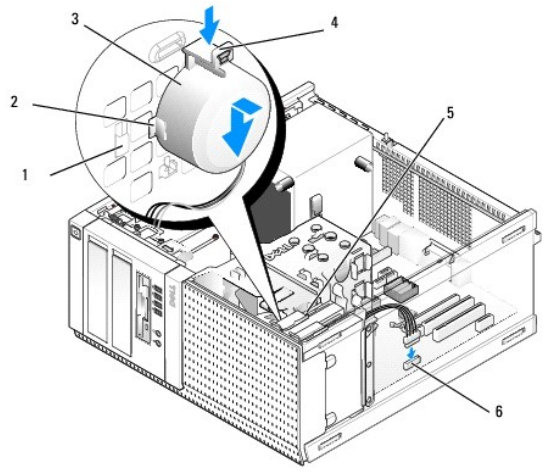
CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.

CAUTION: Disconnect your computer and all attached devices from their electrical outlets.

2. To mount the internal speaker, press the locking tab, position the speaker housing retention tabs under the grill retention tabs provided on top of the hard drive cage, and release the locking tab.



1	hard drive cage retention tab (2)	2	speaker housing retention tab (2)
3	speaker	4	locking tab
5	hard drive cage	6	system board speaker connector

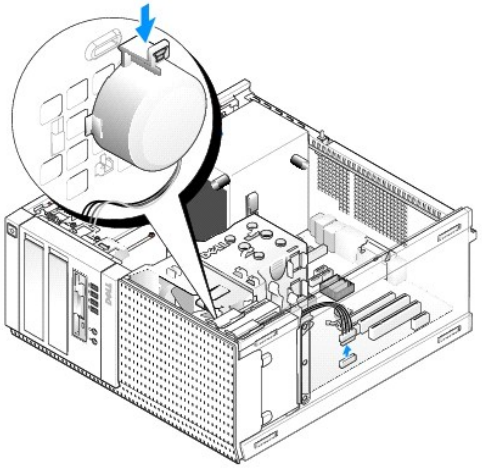
3. Connect the speaker cable to the INT SPKR1 connector on the system board (see System Board Components).
4. Perform the procedure After Working on Your Computer.
5. Boot the computer and check for acceptable speaker performance.

Removing an Internal Speaker

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the cable from the INT SPKR1 connector on the system board (see System Board Components).
3. To remove the internal speaker, press the locking tab, shift the speaker to move the speaker housing retention tabs out of the retention tabs on the grill, and lift the speaker from the chassis.



4. Perform the procedure After Working on Your Computer.

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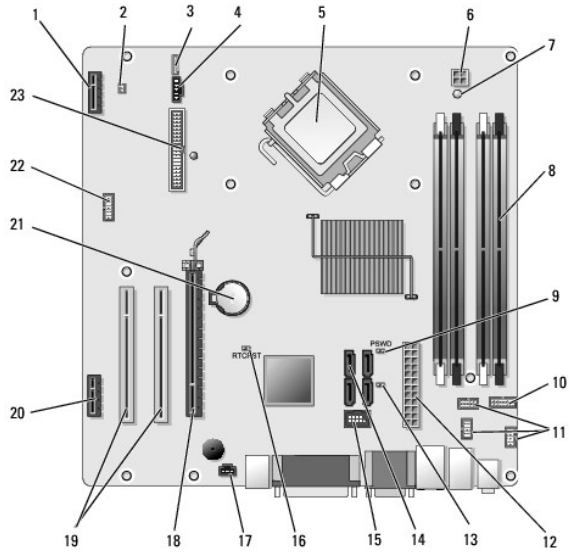
- System Board Components

System Board Components



1	connector for optional wireless card (PCIE_WLS1)	2	thermal sensor connector (THRML1)
3	connector for optional internal speaker (INT_SPKR1)	4	fan connector (FAN_CPU1)
5	processor connector (CPU)	6	processor power connector (12VPOWER)
7	auxiliary power LED (AUX_POWER)	8	memory module connectors (4)
9	password reset pins (PSWD)	10	system status LEDs panel connector
11	I/O assembly connectors (3)	12	power supply connector (POWER)
13	service mode jumper (SERVICEMODE)	14	SATA drive connectors (4)
15	internal USB connector for flex bay	16	BIOS/RTC reset jumper pins
17	intrusion switch connector (INTRUDER)	18	PCIe x16 connector (SLOT1)
19	PCI connector (SLOT2, SLOT3)	20	PCIe x1 connector (SLOT4)
21	RTC battery socket	22	second serial port connector
23	floppy disk connector (DSKT2)		

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- Cards

Cards

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

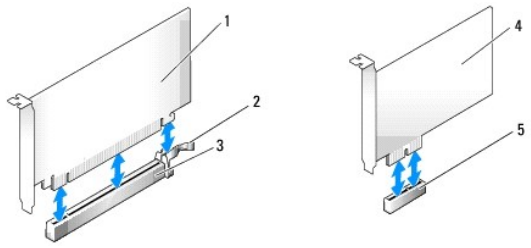
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets help to keep foreign objects out of your computer and help direct airflow for cooling.

Your Dell™ computer supports a PS/2 serial port adapter and provides the following connectors for PCI and PCI Express (PCIe) cards:

- One low-profile PCI card slot
- One low-profile PCIe x16 card slot
- One connector for an internal wireless card

PCI and PCIe Cards



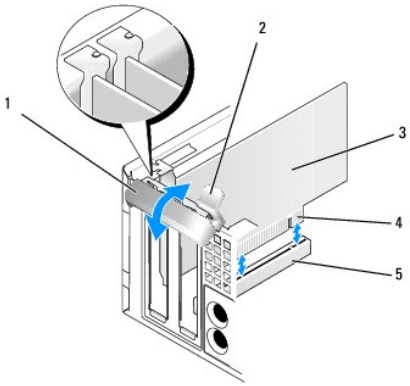
1	PCIe x16 card	2	release lever, securing tab (for PCIe cards)
3	PCIe x16 card slot	4	PCIe x1 card
5	PCIe x1 card slot		

Installing a PCI Card

1. FPerform the procedure Before Working on Your Computer.

NOTE: For PCI card locations, see System Board Components.

2. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.



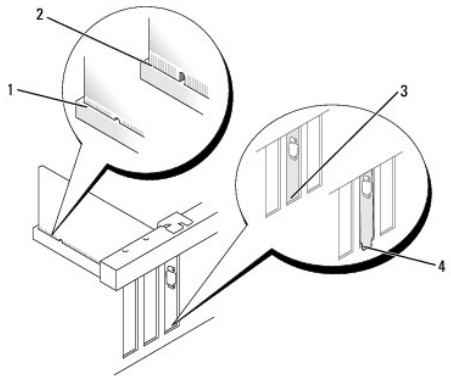
1	card retention latch	2	release tab
3	card	4	card-edge connector
5	card connector		

3. If you are installing a new card, remove the filler bracket to create a card- slot opening. Then continue with step 5.
4. If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Then continue with step 5.
5. Prepare the card for installation.

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

6. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	filler bracket within slot	4	filler bracket caught outside of slot

7. Before closing the card retention latch, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment guide
   - The notch in the top of the card or filler bracket fits around the alignment guide
8. Secure the card(s) by closing the card retention latch and snapping it into place.

NOTICE: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

9. Connect any cables that should be attached to the card.
10. Perform the procedure After Working on Your Computer).

NOTE: See the documentation that came with the card regarding the card's cable connections.

11. If you installed a sound card:
    a. Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the line-in connector on the back panel of the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

12. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and change the setting to **Off** (see the *Dell™ Technology Guide*).

b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

NOTICE: If you disable the integrated network adapter, you will not have AMT functionality.

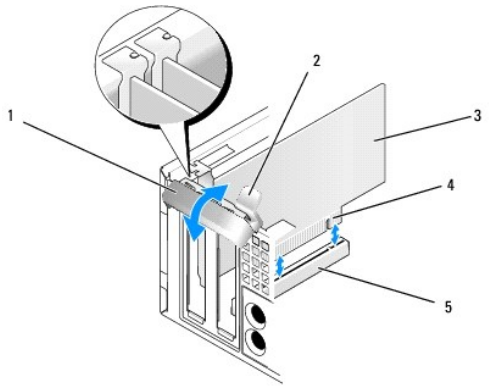
13. Install any drivers required for the card as described in the card documentation.

Removing a PCI Card

1. Perform the procedure Before Working on Your Computer.

NOTE: For PCI card locations, see System Board Components.

2. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.
3. If necessary, disconnect any cables connected to the card.
4. Grasp the card by its top corners, and ease it out of its connector.



1	card retention latch	2	release tab
3	card	4	card-edge connector
5	card connector		

5. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

6. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.

NOTICE: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

7. Secure any remaining card(s) by closing the card retention latch and snapping it into place.
8. Perform the procedure After Working on Your Computer.
9. Uninstall the card's driver. See the documentation that came with the card for instructions.
10. If you removed a sound card:
    a. Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the audio connectors on the back panel of the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

NOTE: See the documentation for the card for information about the card's cable connections.

11. If you removed a network-adapter card connector:
    a. Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the integrated network connector on the back panel of the computer.

PCIe and DVI Cards

Your computer supports one low-profile PCIe x16 card.

If you are replacing a PCIe card with a different type of PCIe card, remove the current driver for the card from the operating system. See the documentation that came with the card for information.

Installing a PCIe x16 Card or DVI Card

1. Perform the procedure Before Working on Your Computer.

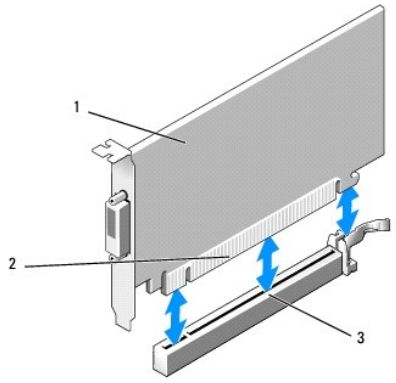
   NOTE: For PCI card locations, see System Board Components.

2. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.
3. If you are installing a new PCIe x16 card or DVI card, remove the filler bracket to create a card-slot opening. Then continue with step 4.
4. If you are replacing a PCIe x16 card or DVI card, remove the card (see Removing a PCIe x16 Card or DVI Card). If necessary, disconnect any cables connected to the card. Then continue with step 5.
5. Prepare the card for installation.

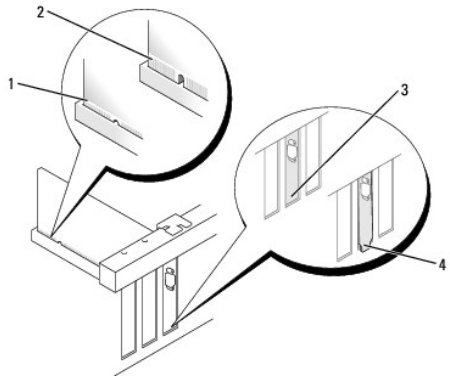
CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

6. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



1	PCIe x16 card PCIe x16 DVI-card	2	card connector
3	system board card connector		



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

NOTICE: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

7. Connect any cables that should be attached to the card.
8. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
9. Secure the card(s) by closing the card retention latch and snapping it into place.
10. Perform the procedure After Working on Your Computer.

NOTE: See the documentation for the card for information about the card's cable connections.

11. If you installed a sound card:
    a. Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the line-in connector on the back panel of the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

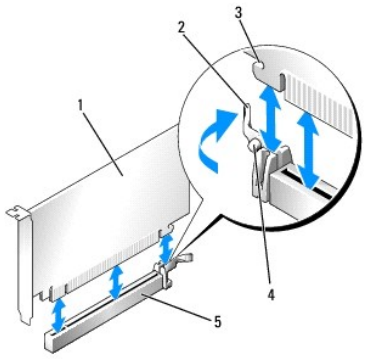
12. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and change the setting to **Off** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.
13. Install any drivers required for the card as described in the card documentation.

Removing a PCIe x16 Card or DVI Card

1. Perform the procedure Before Working on Your Computer.
2. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.
3. If necessary, disconnect any cables connected to the card.
4. Pull the release lever until you move the securing tab out of the securing slot.

   If you are removing a PCIe x16 card, pull the release lever and lift the card up and out of the card connector.

   If you are removing a DVI card, pull the release lever, lift the removal pull tab up, and remove the card from the card connector.



1	PCIe x16 card/PCIe x16 DVI-card	2	release lever
3	securing slot (not all cards)	4	securing tab
5	PCIe x16 card connector		

5. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC compliance of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

6. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
7. Secure any remaining card(s) by closing the card retention latch and snapping it into place.

NOTICE: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

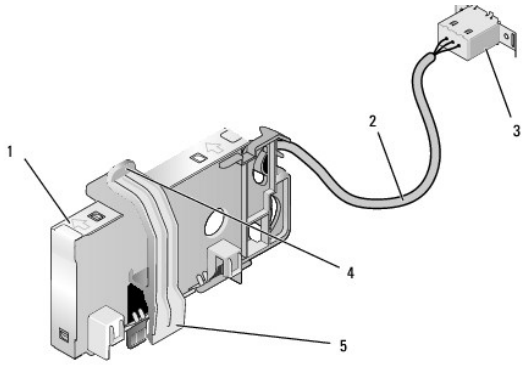
8. Perform the procedure After Working on Your Computer.
9. Uninstall the card's driver. See the documentation that came with the card for instructions.
10. If you removed a sound card:
    a. Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect external audio devices to the audio connectors on the back panel of the computer.

To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

11. If you removed a network-adapter card connector:
    a. Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and change the setting to **On** (see the *Dell™ Technology Guide*).
    b. Connect the network cable to the integrated network connector on the back panel of the computer.

Internal Wireless Card - Installation

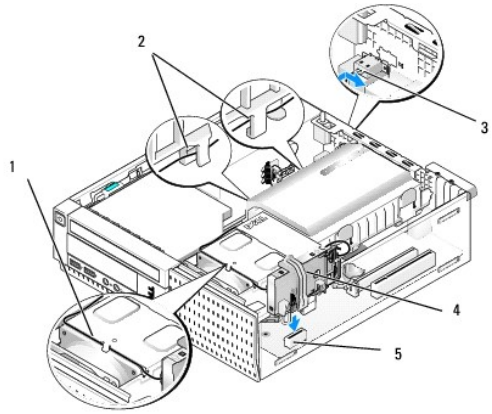
The internal wireless card is an optional device.



1	wireless card assembly	2	wireless card cable to antenna
3	Wi-Fi external antenna connector	4	card retention clasp release
5	card retention clasp		

To install the card, do the following:

1. Perform the procedure Before Working on Your Computer.
2. If installed, remove the filler plug covering the opening in the back panel for the Wi-Fi external antenna connector.
3. Locate the wireless card connector on the system board (see System Board Components).
4. Position the wireless card connector directly above the system board connector with cable edge of the card toward the back of the chassis.
5. Insert the wireless card connector into the system board connector until the card retention clasp catches the metal loop on the side of the chassis and holds the card securely in place.



1	wireless card cable	2	cable guides on hard drive shroud
3	Wi-Fi external antenna connector	4	wireless card assembly
5	wireless card connector		

NOTICE: When routing the wireless card cable through the chassis, avoid making sharp bends. This can cause signal degradation.

6. Route the wireless card cable through the cable channel on the top of the heatsink assembly, through the cable guides on the side of the hard drive shroud, and to the back panel. Use cable clips with existing cable bundles to manage excess cable if necessary.
7. Remove the plug on the back panel where the connector for the Wi-FI antenna is installed.
8. Position the external antenna connector at the end of the wireless card cable in the antenna connector opening in the back panel so that the retaining tabs on the connector faceplate pass through the opening, and the bent end of the connector faceplate is pointed away from the power supply.
9. Slide the connector sideways along the back panel slightly so that the retaining tabs on the connector faceplate hold the connector to the back panel.
10. Connect the Wi-Fi external antenna to the wireless card cable connector.

11. Replace the computer cover.

12. Restart your computer. Setup the wireless device software as needed to support your wireless network.

Internal Wireless Card - Removal

To remove an internal wireless card do the following:

1. Perform the procedure Before Working on Your Computer.

2. Disconnect the Wi-Fi external antenna from the connector on the back of the computer.

3. Disengage the Wi-Fi external antenna connector from the chassis by sliding it along the back panel toward the power supply, then withdrawing it from the opening.

4. Remove the wireless card cable from its routing path.

5. Grasp the wireless card assembly at the ends, press down the card retention clasp release and lift the card to unplug it from the system board wireless card connector. Remove the wireless card assembly from the chassis.

6. Close the opening for the Wi-Fi external antenna connector with the plug provided for the computer. Contact Dell for a replacement plug if none is available.

7. Replace the computer cover.

Installing a Second External Serial Port

If adding an external serial port using a serial connector mounted on a slot filler bracket, connect the internal cable of the connector to the internal serial port connector on the system board (see System Board Components).

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Chassis Intrusion Switch

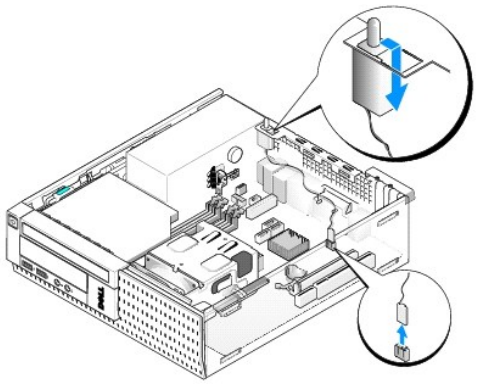
Chassis Intrusion Switch

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Chassis Intrusion Switch

1. Perform the procedure Before Working on Your Computer.
2. Remove the computer cover (see Removing the Small Form Factor Computer Cover).
3. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
4. Disconnect the chassis intrusion switch cable from the system board.
5. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until it snaps securely into place.
2. Reconnect the cable to the system board.
3. Replace the computer cover (see Replacing the Small Form Factor Computer Cover).

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F2> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. In the **Settings** menu, select **Security**, then **Chassis Intrusion**. Use the **tab**, **arrow**, and **space bar** keys to choose the option you prefer. If you changed

the setting, move to the **Apply** button and press **Enter**.

NOTE: The default setting is **On-Silent**.

4. Save your BIOS settings and exit system setup.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Small Form Factor Computer Cover

Small Form Factor Computer Cover

Removing the Small Form Factor Computer Cover

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

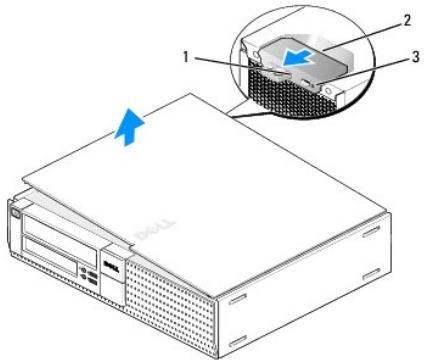
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Perform the procedure Before Working on Your Computer.
2. If a security cable or a padlock (through the padlock ring) is attached, remove it.

NOTE: For convenience, lay the computer on its side before working inside the chassis.

3. Locate the cover release latch and slide it back as you lift the end of the cover near the latch.
4. With the cover end near the latch raised slightly, slide the cover toward the latch end of the chassis to pull the tabs at the other end of the cover out of the slots in the chassis.

CAUTION: Graphics card heatsinks can become very hot during normal operation. Ensure that a graphics card heatsink has had sufficient time to cool before you touch it.



1	padlock ring	2	cover release latch
3	security cable slot		

Replacing the Small Form Factor Computer Cover

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

1. Ensure that all cables are connected, and fold cables out of the way.

   Gently pull the power cables toward you so that they do not get caught underneath the drives.
2. Ensure that no tools or extra parts are left inside the computer.
3. To replace the cover:

a. Align the bottom of the cover with the hinge tabs located along the bottom edge of the computer.

b. Using the hinge tabs as leverage, rotate the cover downward to close it.

c. Snap the cover into place by pulling back on the cover release latch and then releasing the latch when the cover is properly seated.

d. Ensure that the cover is seated correctly before moving the computer.

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

4. Attach the computer stand (if applicable). For instructions, see the documentation that came with the stand.

5. Connect your computer and devices to electrical outlets, and turn them on.

   After you remove and replace the cover, the chassis intrusion detector (optional on some computers), if installed and enabled, causes the following message to appear on the screen at the next computer start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector by changing **Chassis Intrusio**n to **On** or **On-Silent**. See Resetting the Chassis Intrusion Detector.

NOTE: If an administrator password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Processor

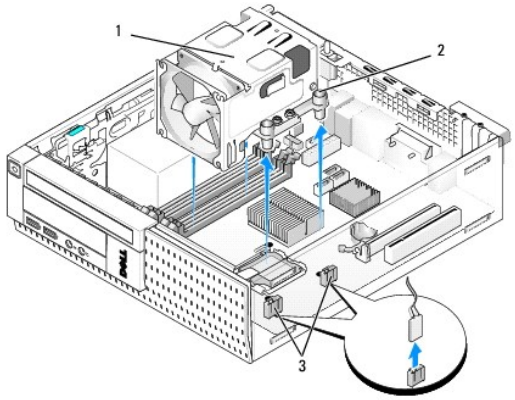
Processor

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the Processor

1. Perform the procedure Before Working on Your Computer.
2. Remove the hard drive shroud assembly (see Removing the Hard Drive and Shroud Assembly).
3. Remove the optical drive (see Removing an Optical Drive).
4. If an internal wireless card is installed, unplug the card from the system board and move it and the wireless card cable away from the fan shroud (see Internal Wireless Card - Removal).
5. Remove all cables routed through guides on the fan shroud.
6. Disconnect the two fan cables from the system board (see System Board Components).
7. Loosen the two captive screw on each side of the heatsink assembly and lift the assembly out of the chassis.

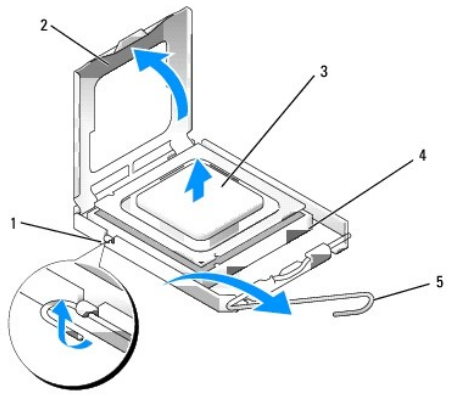


1	heatsink assembly	2	captive screw housing (4)
3	fan cable connectors (2)		

CAUTION: The heatsink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

NOTICE: Unless a different heatsink is required for the new processor, reuse the original heatsink assembly after you replace the processor.

8. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then, pull the lever back to release the processor.



1	center cover latch	2	processor cover
3	processor	4	socket
5	release lever		

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

9. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

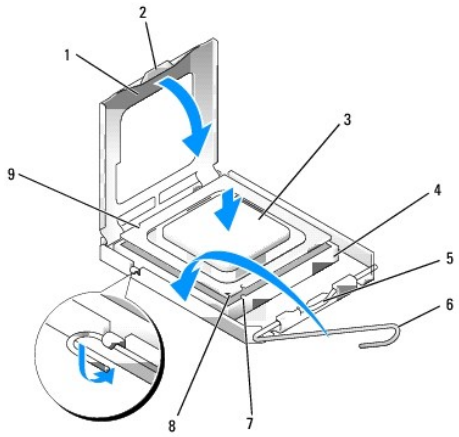
NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Perform the procedure Before Working on Your Computer.
2. Unpack the new processor, being careful not to touch the underside of the processor.

NOTICE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

3. If the release lever on the socket is not fully extended, move it to that position.
4. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
5. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

NOTICE: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

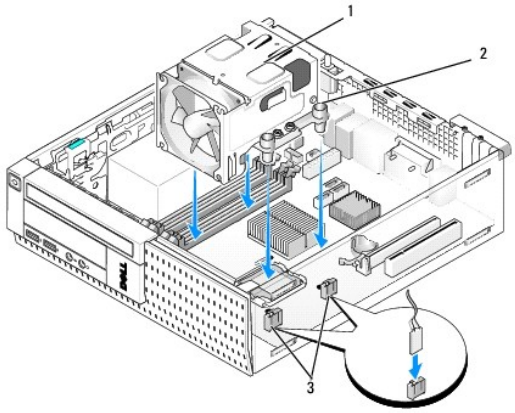
6. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
7. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.
8. Pivot the socket release lever back toward the socket and snap it into place to secure the processor.
9. Clean the thermal solution from the bottom of the heatsink.

NOTICE: Ensure that you apply new thermal solution. New thermal solution is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

10. Apply the new thermal solution to the top of the processor as needed.
11. Replace the heatsink assembly:
    a. Set the heatsink in place on the system board.
    b. Tighten the four captive screws to secure the heatsink to the chassis.
    c. Reconnect the two fan cables to the system board.

NOTICE: Ensure that the heatsink is correctly seated and secure.



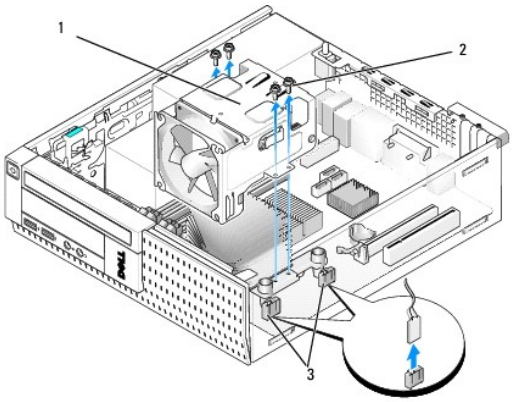
1	heatsink assembly	2	captive screw in housing (4)
3	fan cable connectors (2)		

12. If the system contained a wireless card that was removed in a previous step, replace the card (see Internal Wireless Card - Installation).
13. Reroute cables through guides on the fan shroud.
14. Replace the optical drive (see Replacing or Installing an Optical Drive).
15. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
16. Perform the procedure After Working on Your Computer.

Remove and Replace the Fan and Shroud Assembly

The fan and shroud assembly can be removed and replaced without removing the heatsink.

1. Perform the procedure Before Working on Your Computer.
2. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
3. Remove the optical drive (see Removing an Optical Drive).
4. If an internal wireless card is installed, unplug the card from the system board and move it and wireless card cable away from the fan shroud (see Internal Wireless Card - Removal).
5. Remove cables routed through guides on the fan shroud.
6. Disconnect the two fan cables from the system board (see System Board Components).
7. Remove the four screws that secure the fan and shroud assembly to the heatsink.
8. Lift the fan and shroud assembly out of the chassis.



1	fan and shroud assembly	2	fan shroud screws (4)
3	fan cable connectors (2)		

9. Position the new fan and shroud assembly onto the heatsink, aligning the screw holes in the shroud with the holes in the heatsink.
10. Secure the fan shroud to the heatsink with the four screws removed in the step above.
11. Connect the two fan cables to the system board (see System Board Components).
12. If the system contained a wireless card that was removed in a previous step, replace the card (see Internal Wireless Card - Installation).
13. Reroute cables through guides on the fan shroud.
14. Replace the optical drive (see Installing an Optical Drive).
15. Replace the hard drive and shroud assembly.
16. Perform the procedure After Working on Your Computer.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

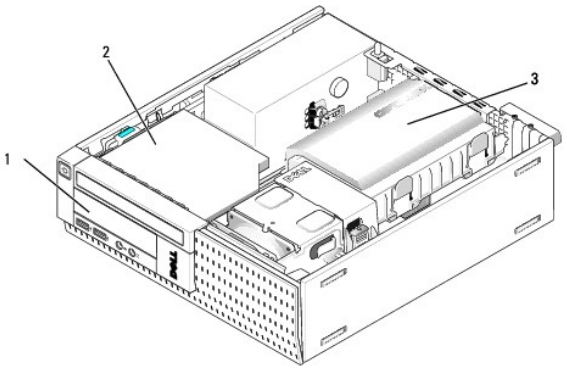
- `Drives

`Drives

NOTE: If you are removing or adding a device that affects the hardware or RAID configuration of the system, BIOS settings may need to be changed. Refer to the *Dell™ Technology Guide* for more information.

Your computer supports:

- One 3.5-inch SATA (serial ATA) hard drive or two 2.5-inch SATA hard drives
- One slimline media card reader or one slimline floppy drive
- One SATA slimline optical drive
- One eSATA drive (external)



1	3.5-inch drive bay for optional slimline floppy drive or slimline media card reader	2	slimline optical drive
3	hard drive and shroud assembly		

General Installation Guidelines for SATA Devices

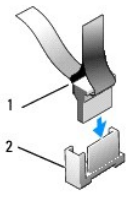
SATA connectors on the system board are labeled SATA0, SATA1, and SATA2.

Hard drives must be connected to the lower numbered SATA connectors, while any other SATA devices (like an optical drive) must be connected to the remaining SATA connectors numbered higher than the one that the hard drive(s) is connected to. For example, if you have two SATA hard drives and one SATA optical drive, connect the two hard drives to the SATA0 and SATA1 connectors, and connect the SATA optical drive to the SATA2 connector. (See System Board Components for the location of SATA connectors on the system board.)

Connecting Drive Cables

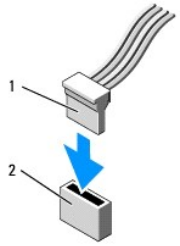
When you install a drive, you connect two cables (a DC power cable and a data interface cable) to the back of the drive.

Data Interface Connectors

Serial ATA (SATA) Connector


1	data interface cable connector	2	SATA interface connector

Power Cable Connectors

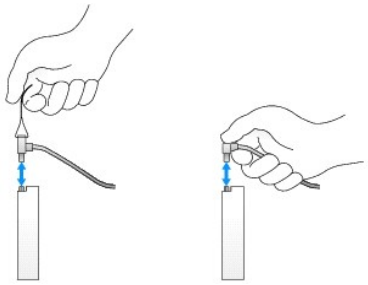


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing an cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

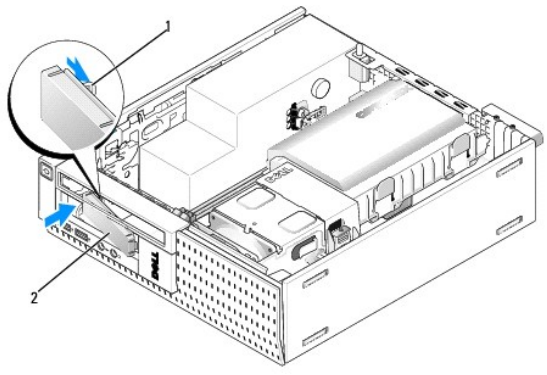
When connecting and disconnecting a SATA data cable, hold the cable by the black connector at each end.



Removing Drive Bay Inserts

If you are installing a new drive:

1. Perform the procedure Before Working on Your Computer.
2. Press the insert retention tab on the inside of the bezel to release the drive bay insert. Remove the drive bay insert from the front of the bezel.



1	retention tab	2	drive bay insert

Replacing Drive Bay Inserts

If you are removing a drive, and need to replace the inserts:

1. From inside the chassis, place the plastic insert over the drive bay opening and insert the tabs at the right edge of the insert into the slots at the right side of the drive bay opening.
2. Swing the left side of the insert into the opening until it snaps into place.

Hard Drive

The computer may include one 3.5-inch hard drive, or one or two 2.5-inch hard drives.

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

NOTICE: When handling 2.5-inch hard drives, avoid pressing on the metal side (drive label). This can cause serious damage to the drove.

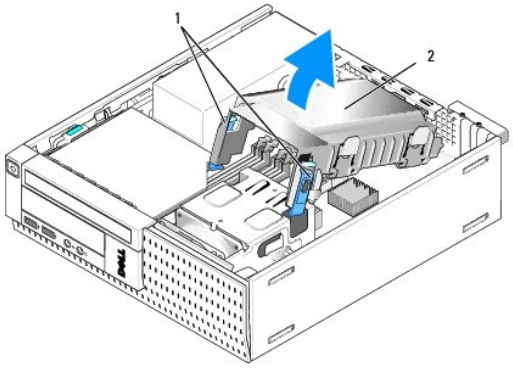
NOTE: If you are removing or adding a drive that affects the RAID configuration of the system, BIOS settings may need to be changed. Refer to the *Dell™ Technology Guide* for more information.

Removing the Hard Drive and Shroud Assembly

1. Perform the procedure Before Working on Your Computer.
2. If cables are routed through the cable channel the side of the hard drive shroud, remove them.
3. Press in on the two blue securing tabs on each side of the drive caddy and lift the end near the heatsink assembly.

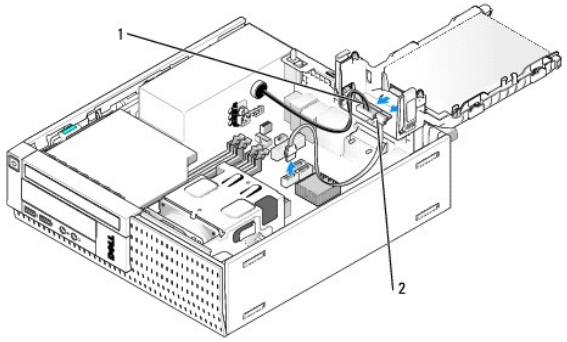
NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. Lift the hard drive and shroud assembly out of the computer.



1	securing tabs (2)	2	hard drive and shroud assembly

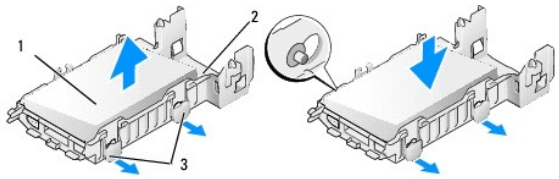
5. Disconnect the P3 power supply cable and the SATA cable(s) from the hard drive and shroud assembly. If two 2.5-inch drives are installed, note the drive connected to the SATA0 connector on the system board (see System Board Components).



1	power cable	2	SATA data cable

Removing the Hard Drive

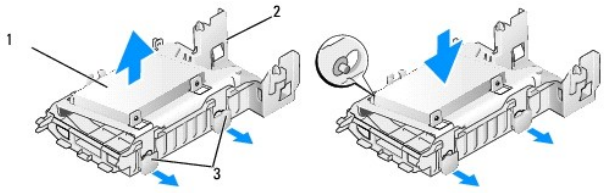
1. If you are removing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Perform the procedure Before Working on Your Computer.
3. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
4. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
5. If you are removing a 3.5-inch drive:
   a. Remove the old hard drive from the shroud by pulling out the release tabs slightly to free the drive from the shroud.



1	3.5" hard drive	2	hard drive shroud
3	release tabs (2)		

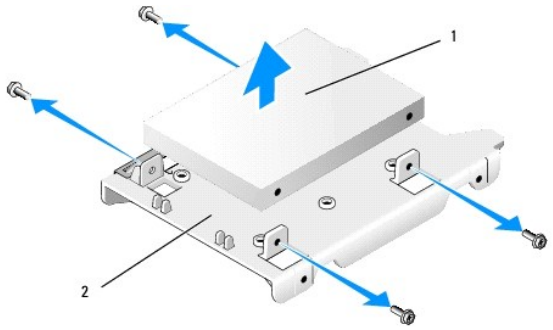
   b. Install a replacement primary hard drive. Go to Replacing a Hard Drive and skip the rest of this procedure.

6. If you are removing a 2.5-inch drive:
   a. Remove the 2.5-inch hard drive caddy from the shroud by slightly pulling out the release tabs to free the caddy.

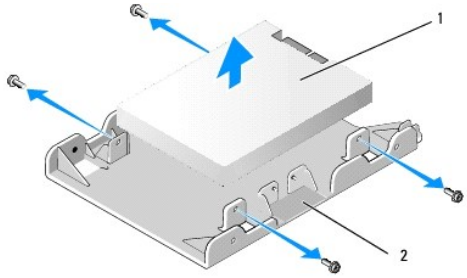


1	2.5" hard drive with caddy	2	hard drive shroud
3	release tabs (2)		

   b. Detach the hard drive to be removed from the 2.5-inch hard drive caddy by removing the four screws, two on each side, that secure it to the caddy. The primary hard drive is mounted on the flat side of the 2.5-inch hard drive caddy, and the secondary hard drive is mounted on the U-shaped side.



1	2.5-inch hard drive mounted as the primary drive	2	2.5-inch hard drive caddy

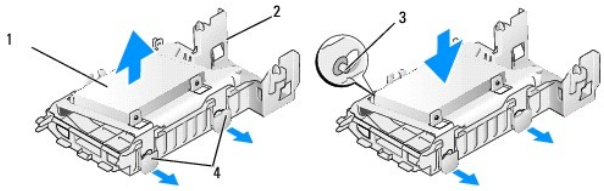


1	2.5-inch hard drive mounted as the secondary drive	2	2.5-inch hard drive caddy

c. If the primary 2.5-inch hard drive was removed, and will be replaced by the secondary hard drive installed on the caddy, remove the secondary drive and install it on the mount it on the flat side of the 2.5-inch hard drive caddy.

d. If the primary 2.5-inch hard drive was removed and no secondary hard drive was installed, install a primary hard drive. Go to Replacing a Hard Drive and skip the rest of this procedure.

e. Install the 2.5-inch hard drive caddy into the shroud by slightly pulling out the release tabs and aligning the pins inside the shroud with the holes on the sides of the 2.5-inch hard drive caddy.



1	2.5" hard drive with caddy	2	hard drive shroud
3	pins (2 on each side)	4	release tabs (2)

f. Install the hard drive and shroud assembly in the chassis (see Replacing the Hard Drive and Shroud Assembly).

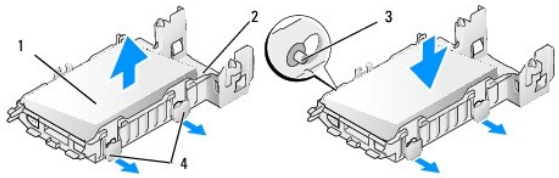
Replacing a Hard Drive

1. Unpack the replacement hard drive, and prepare it for installation. Check the documentation provided for the drive to verify that it is configured for your computer.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

2. If you are replacing a 3.5-inch drive:

   a. Insert the new hard drive into the shroud by pulling out the release tabs slightly and aligning the pins inside the shroud with the screw holes on the sides of the hard drive. The side of the hard drive with the label plate must oriented away from the shroud, and connector end of the hard drive must be toward the shroud securing tabs.



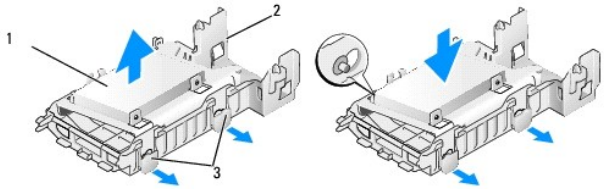
1	2.5" hard drive with caddy	2	hard drive shroud
3	pins (2 on each side)	4	release tabs (2)

b. Install the hard drive and shroud assembly in the chassis (see Replacing the Hard Drive and Shroud Assembly).

3. If you are installing a 2.5-inch drive:

a. Remove the hard drive and shroud assembly, if necessary (see Removing the Hard Drive and Shroud Assembly).

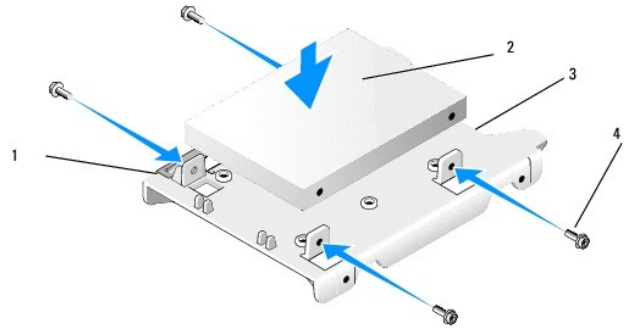
b. Remove the 2.5-inch hard drive caddy from the shroud by slightly pulling out the release tabs to free the caddy.



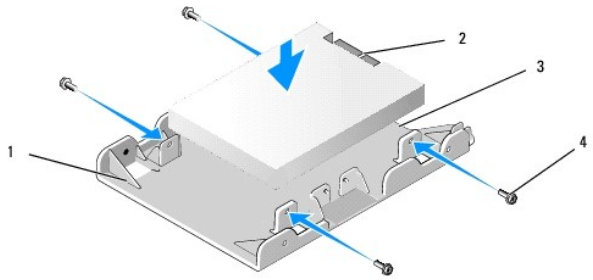
1	2.5" hard drive with caddy	2	hard drive shroud
3	release tabs (2)		

c. Position the new hard drive on the caddy. Orient the drive so that when it is installed in the computer, the side of the hard drive with the label plate is toward the system board, the screw holes align with the holes in the locator tabs, and the connector end of the drive(s) is toward the caddy's cable cutout.

NOTE: When mounting hard drives onto a 2.5-inch hard drive caddy, the primary hard drive must be mounted on the flat side of the caddy with the label plate away from the caddy, and the secondary hard drive must be mounted on the U-shaped side of the caddy, with the label plate facing the caddy. In both configurations, the connector end of the hard drives must be toward the cable cutout.



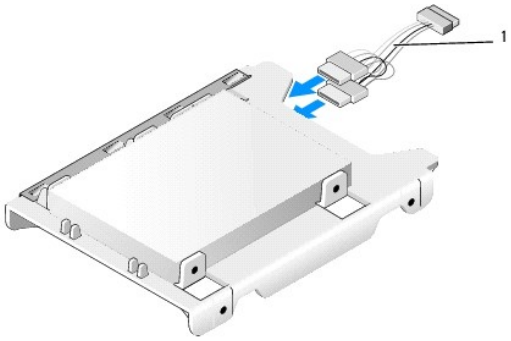
1	2.5" hard drive	2	2.5" hard drive caddy
3	cable cutout	4	screws (4)



1	2.5-inch hard drive caddy, U-shaped side up	2	2.5-inch hard drive, connector end
3	cable cutout	4	screws (4)

d. Secure the drive to the drive caddy with four screws, two on each side.

e. Attach the power cable Y-adapter to the hard drive(s) mounted on the caddy.



1	power cable Y-adapter

f. Install the drive caddy in the drive shroud by slightly pulling out the release tabs on the drive shroud and aligning the pins inside the shroud with the holes on the sides of the drive caddy. The flat side of the caddy must be oriented toward the system board when the hard drive and shroud assembly is installed.

g. Install the hard drive and shroud assembly in the chassis (see Replacing the Hard Drive and Shroud Assembly).

4. Ensure that all cable connectors are properly seated and cables are routed through cable channels.

5. Perform the procedure After Working on Your Computer.

6. Reconnect power and I/O devices to the computer, as needed.

7. Perform the following:

a. Turn on the computer.

b. When the computer boots, press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide* for more information).

c. In the **Settings** menu, select Drives, and select Drives in the sub- menu.

d. Enable the SATA1 port, if necessary, to support a secondary hard drive. If any settings were changed, click Apply.

e. Verify that the SATA port information displayed is correct.

f. If a non-bootable primary hard drive was installed, insert a bootable medium into your boot drive.

g. Click Exit.

8. If necessary, press **F12** when the computer starts to enter the **Boot Drive Menu**. Select a bootable drive and continue.

9. When the operating system loads, partition and logically format your new drive, if necessary.

NOTE: For instructions, see the documentation that came with your operating system.

10. Test the hard drive by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

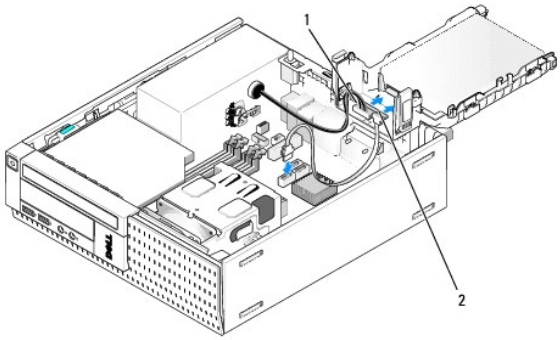
11. Install a bootable operating system on the primary hard drive, if necessary. Refer to documentation provided with the operating system.

Replacing the Hard Drive and Shroud Assembly

1. Connect the P3 power cable from the power supply to the drive(s).

2. If one hard drive is installed in the hard drive and assembly, connect the SATA data cable to the drive and to the SATA0 connector on the system board.

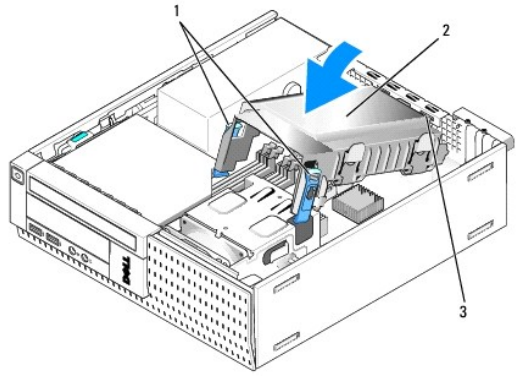
3. If two hard drives are installed in the hard drive and shroud assembly, connect the SATA cable from the primary drive to the SATA0 connector on the system board, and the SATA cable from the secondary drive to the SATA1 connector.



1	power cable	2	SATA data cable

4. Check all connectors to ensure that they are properly cabled and firmly seated.

5. Gently insert the hard drive and shroud assembly tabs into the alignment slots on the back of the chassis and rotate the assembly downward until it clicks into place.



1	release tabs (2)	2	hard drive and shroud assembly
3	shroud alignment tabs and slots (3)		

6. Route the SATA data cable(s) and cables removed earlier through the cable channel on the side of the hard drive shroud.

Optical Drive

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing an Optical Drive

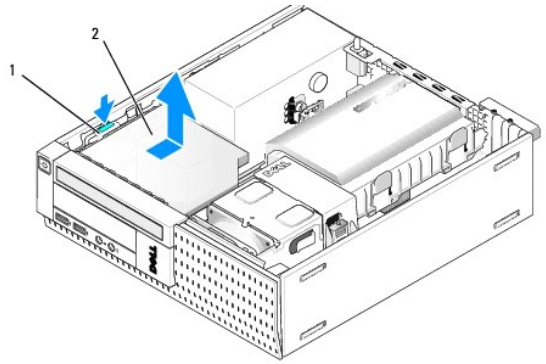
1. Perform the procedure Before Working on Your Computer.

2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

3. Disconnect the power and data cable from the optical drive.

4. Press the drive release latch, slide the drive towards the back of the computer, then lift the drive out of the chassis.

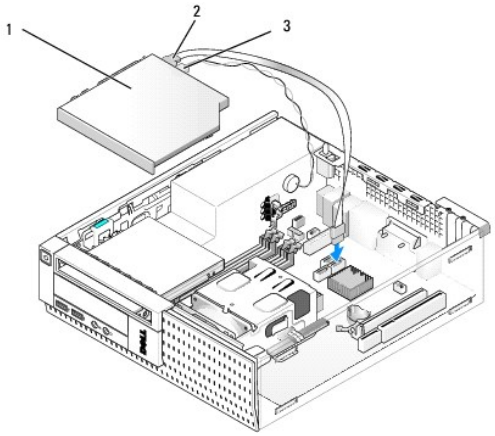


1	drive release latch	2	optical drive

5. If the optical drive is not being replaced after removal:
    a. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
    a. Disconnect the SATA cable from the system board and remove the cable from the chassis.
    b. Replace the hard drive and shroud assembly.
6. Perform the procedure After Working on Your Computer.

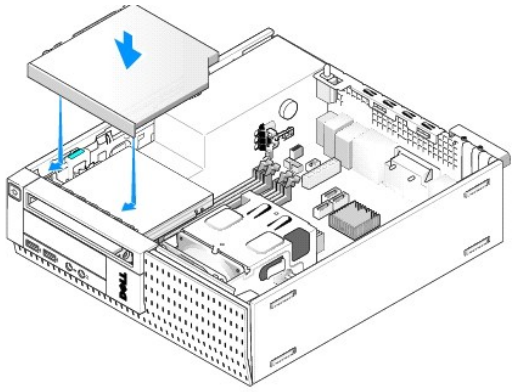
Installing an Optical Drive

1. Unpack the drive and prepare it for installation. Check the documentation that accompanied the drive to verify that the drive is configured for your computer.
2. Perform the procedure Before Working on Your Computer.
3. Remove the hard drive and shroud assembly, if in place (see Removing the Hard Drive and Shroud Assembly).
4. Connect power supply cable P6 and a SATA data cable to the drive. Connect the other end of the SATA cable to the SATA1 or SATA2 connector on the system board.



1	optical drive	2	data cable
3	power cable		

5. Gently position the drive into the bay and slide it forward until it clicks into place.



6. Check all cable connections.
7. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
8. Check cable routing. Route cables through cable guides to provide airflow for the fan and cooling vents.
9. Perform the procedure After Working on Your Computer.
10. See the documentation that came with the drive for instructions on installing any software required for drive operation.
11. Enter system setup and select the appropriate **Drive** option (see the *Dell™ Technology Guide*).
12. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Floppy Drive

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

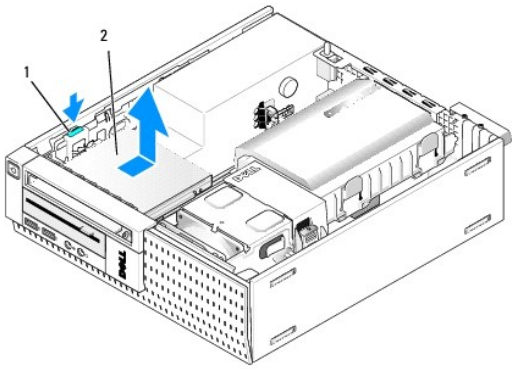
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing a Floppy Drive

1. If the floppy drive you are removing will not be replaced:
   a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).
   b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**
   c. Choose the option to **Disable** the floppy drive.
   d. Click **Apply**, then **Exit**.
   e. Reboot your computer and power it off.
2. Perform the procedure Before Working on Your Computer.
3. Remove the optical drive (see Removing an Optical Drive).

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. If you are removing a floppy drive, push down the drive release tab to unlock it.
5. Gently lift the data cable from the floppy data cable edge connector.



1	drive release tab	2	floppy drive

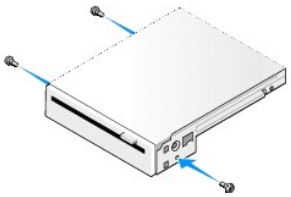
6. Push down the drive release latch and slide the floppy drive towards the back of the computer. Then lift it out of the chassis.

7. If the drive is not being replaced with any device:
   a. Disconnect the drive data cable from the connector on the system board, and remove it from the chassis.
   b. Remove the bezel (see Remove the Bezel).
   c. Install an insert, if available, into the bezel to cover the drive bay.
   d. Remove the shoulder screws from the drive and attach them to the inside of the bezel insert.
   e. Replace the bezel (see Replacing the Bezel).
   f. Perform the procedure After Working on Your Computer.

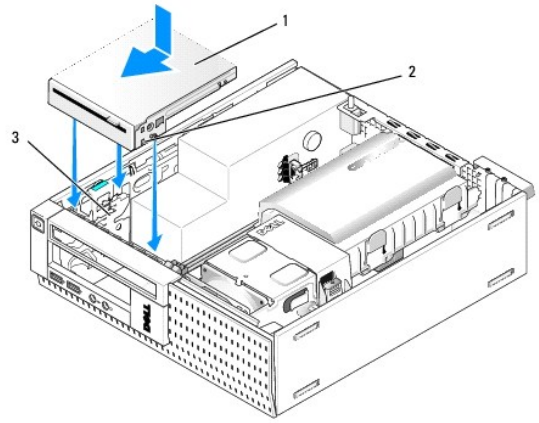
Installing a Floppy Drive

1. If you are installing a floppy drive into a bay that was previously unused:
   - Perform the procedure Before Working on Your Computer.
   - Remove the bezel (see Remove the Bezel).
   - Remove the floppy drive bay insert from the bezel (see Removing Drive Bay Inserts).
   - Remove the shoulder screws from the drive bay insert, and attach them to the floppy drive.

2. If you are installing a floppy drive different from the one removed, remove the three shoulder screws from the floppy drive removed and attach them to the new floppy drive.

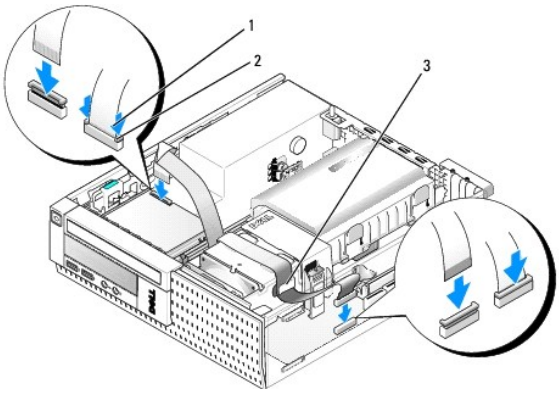


3. Align the screws on the drive with the bracket slots in the computer, and gently position the drive until it clicks into place.



1	floppy drive	2	screws (3)
3	bracket slots (3)		

4. Insert the data cable into the connector on the system board (see System Board Components). Route the data cable under the guides on the sides of the fan shroud.



1	cable release tab	2	floppy drive data cable edge connector
3	cable routing guide		

5. Insert the floppy drive cable into the cable release tab on the floppy drive and press down on the tab until it clicks to lock it in place.
6. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
7. Replace the optical drive (see Installing an Optical Drive).
8. Check all cable connections and cable routing.
9. Perform the procedure After Working on Your Computer.
10. If you are adding a floppy drive to the computer system:
    a. Boot your computer and press **F2** when prompted to enter system **Setup** (see the *Dell™ Technology Guide*).
    b. On the **Settings** menu, select **Drives**, then **Diskette Drive.**
    c. Choose the option to **Enable** the floppy drive.
    d. Click **Apply**, then **Exit**.
    e. Reboot your computer.
11. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Media Card Reader

CAUTION: Before you begin any of the procedures in this section, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

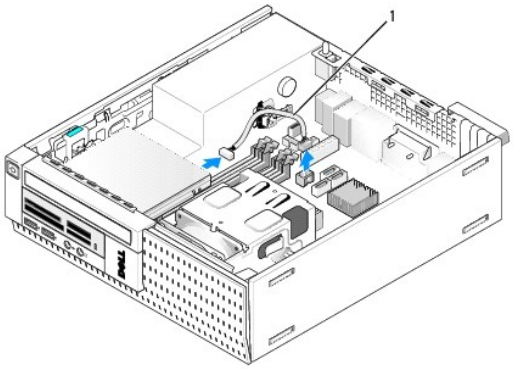
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing a Media Card Reader

1. FPerform the procedure Before Working on Your Computer.
2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
3. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
4. Remove the optical drive (see Removing an Optical Drive).

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

5. Disconnect the cable from the media card reader.



1	media card reader data cable

1	media card reader data cable

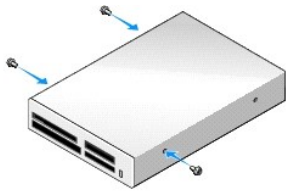
6. Push down the drive release latch and slide the media card reader towards the back of the computer. Then lift the media card reader out of the chassis.
7. If the media card reader is not being replaced with any device:
   a. Disconnect the media card reader cable from the internal USB connector on the system board, and remove it from the chassis.
   b. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
   c. Remove the bezel (see Remove the Bezel).
   d. Install an insert, if available, into the bezel to cover the media card reader bay.
   e. Remove the shoulder screws from the media card reader and attach them to the inside of the bezel insert.
   f. Replace the bezel (see Replacing the Bezel).
   g. Perform the procedure After Working on Your Computer.

Replacing or Installing a Media Card Reader

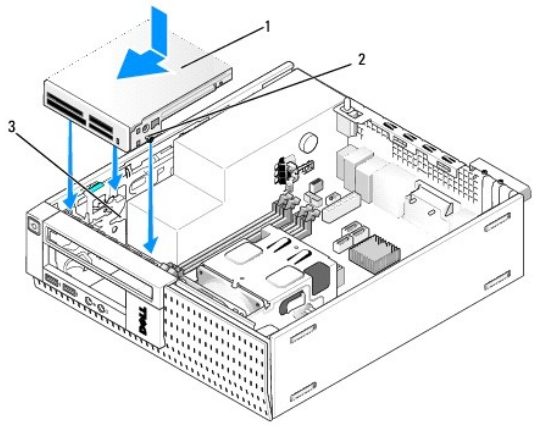
1. If you are replacing a media card reader with another one, remove the shoulder screws from the old media card reader and install them onto the new one.
2. If you are installing a media card reader into an unoccupied media card reader bay, perform the following steps:
   a. Perform the procedure Before Working on Your Computer.
   b. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
   c. Remove the bezel (see Remove the Bezel).
   d. Remove the drive bay insert from the bezel.

e. Remove the three shoulder screws from the inside of the drive bay insert, and install them onto the media card reader.

f. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).

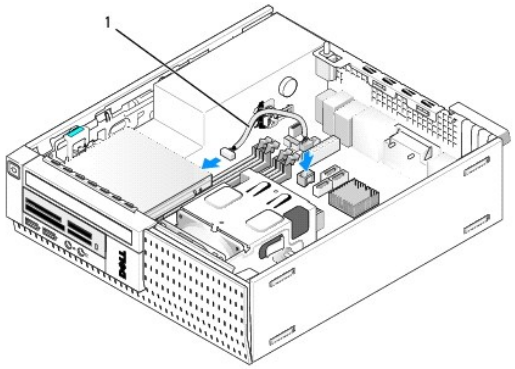


3. Align the screws on the media card reader with the bracket slots in the computer, and gently move the drive forward until it clicks into place.



1	media card reader	2	screws (3)
3	bracket rails (3)		

4. Connect the media card reader cable to the connectors on the media card reader and internal USB connector on the system board (see System Board Components).



1	media card reader data cable

5. Replace the optical drive (see Installing an Optical Drive).

6. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).

7. Check all cable connections.

8. Check cable routing. Route cables through the cable guides to ensure proper airflow through the fan and cooling vents.

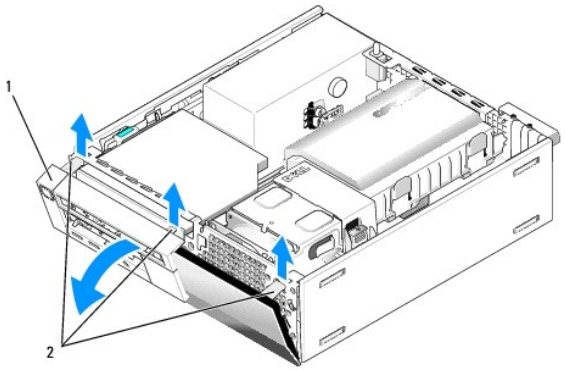
9. Perform the procedure After Working on Your Computer.

10. See the documentation that came with the drive for instructions on installing any software required for drive operation.

11. Verify that your computer works correctly by running the Dell Diagnostics (see the *Dell™ Technology Guide*).

Remove the Bezel

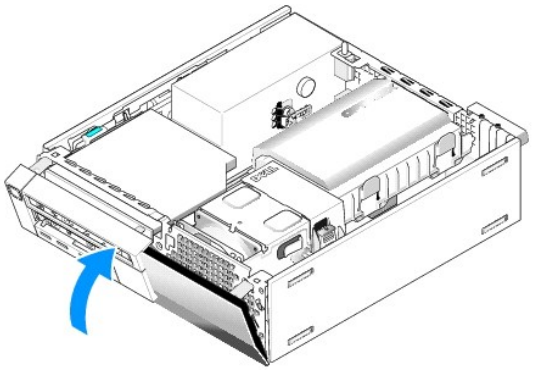
Lift the three front cover retention tabs to release the top edge of the cover. Roll the cover down and lift it away from the chassis.



1	bezel	2	retention tabs (3)

Replacing the Bezel

To replace the bezel, insert the hooks at the bottom of the bezel into the slots provided at the base of the chassis, and rotate the bezel toward the chassis until it snaps into place.



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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- I/O Assembly

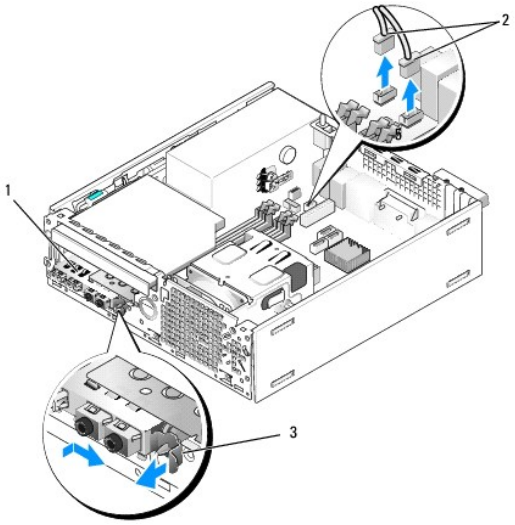
I/O Assembly

Removing the I/O Assembly

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Perform the procedure Before Working on Your Computer.
2. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
3. Remove the optical drive (see Removing an Optical Drive).
4. Remove the floppy drive, if installed (see Removing a Floppy Drive).
5. Remove the bezel (see Remove the Bezel).
6. Disconnect the I/O assembly cables from the system board (see System Board Components).



1	I/O assembly	2	I/O assembly cables/connectors
3	locking tab		

7. Gently pull the I/O assembly release tab forward, and slide the I/O assembly to the right to release it from it's locator slot. Move the I/O assembly away from front panel while guiding the I/O assembly cables out of the front of the chassis.
8. If you are not replacing the I/O assembly:
   a. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
9. Perform the procedure After Working on Your Computer.

Replacing the I/O Assembly

To replace the I/O assembly, do the following:

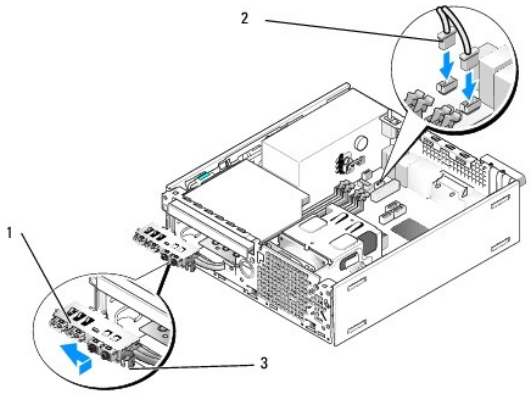
1. Remove the computer cover, if installed (see System Board Components).

   NOTE: Use the guides on the I/O assembly bracket to help position the I/O assembly in place, and use the notch on the I/O assembly bracket to help seat the panel.

2. Remove the bezel (see Remove the Bezel).

3. Feed the I/O assembly cables into the front of the chassis through the opening for the I/O assembly until the assembly is in place. Ensure that the securing tab points toward the right (toward the grill).

4. With the I/O connector block in flush to the front panel, shift it to the right, then shift it to the left and push it in until it snaps into place. Notice that when shifting the connector block to the left, a tang on the left end of the connector block will slide into a slot in the front panel.



1	I/O assembly	2	I/O assembly cables, connectors (2)
3	securing tab		

5. Plug the I/O assembly cable connectors into their system board connectors (see System Board Components).

6. Join the I/O assembly cables to the cable bundle routed through the middle of the chassis.

7. Replace the bezel (see Replacing the Bezel).

8. Perform the procedure After Working on Your Computer.

9. Reboot your computer and exercise the I/O panel to ensure that it is working properly.

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Power Supply

Power Supply

Replacing the Power Supply

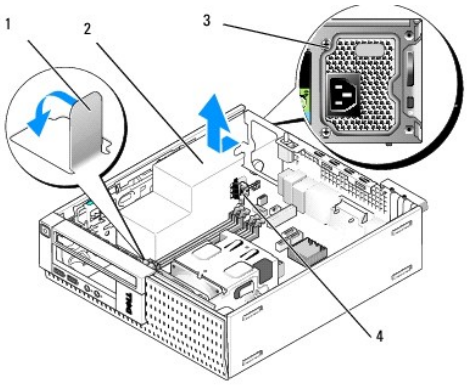
CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. If installed, remove the optical drive (see Removing an Optical Drive).
3. If installed, remove the floppy drive or media card reader (see Floppy Drive).
4. Remove the hard drive and shroud assembly (see Removing the Hard Drive and Shroud Assembly).
5. Disconnect the DC power supply cables from the system board and the drives.

   NOTE: Remember the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent their being pinched or crimped.

6. Detach the thermal sensor from the power supply.
7. Remove the screws at the back of the power supply that secure it to the chassis.
8. At the front end of the power supply, bend up blocking tab to allow the power supply to move forward.
9. Slide the power supply toward the front of the computer approximately 3/4 inch and lift it out of the chassis.



1	blocking tab	2	power supply
3	mounting screw (2)	4	thermal sensor

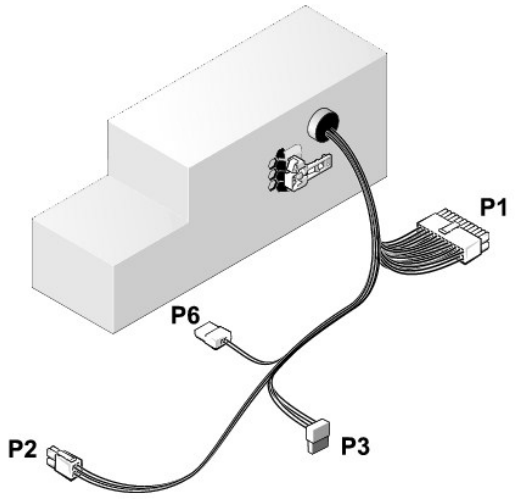
10. Slide the replacement power supply into place.
11. Bend down the blocking tab at the front end of the power supply just enough to stop the power supply from sliding forward.
12. Replace the screws that secure the power supply to the back of the computer chassis.
13. Reattach the thermal sensor to the power supply.

14. Reconnect the DC power cables to the system board and drives (see System Board Components and `Drives).
15. Replace the floppy drive or media card reader (see Installing a Floppy Drive).
16. Replace the optical drive (see Installing an Optical Drive).
17. Replace the hard drive and shroud assembly (see Replacing the Hard Drive and Shroud Assembly).
18. Perform the procedure After Working on Your Computer.
19. Connect the AC power cable to the power supply AC power connector.

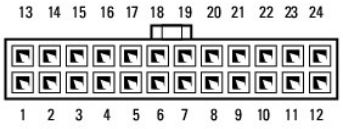
NOTICE: To connect a network cable, plug the cable into the network wall jack and then plug it into the computer.

20. Connect your computer and devices to electrical outlets, and turn them on.

DC Power Connectors



DC Power Connector P1



Pin Number	Signal Name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	GND	Black
4	VCC (+5 V)	Red
5	GND	Black
6	VCC (+5 V)	Red
7	GND	Black
8	PS_PWRGOOD*	Gray
9	P5AUX	Purple
10	V_12P0_DIG	Yellow
11	V_12P0_DIG	Yellow

12	+3.3 V	Orange
13 (optional)	+3.3V	Orange
14	-12 V*	Blue
15	GND	Black
16	PWR_PS_ON	Green
17	GND	Black
18	GND	Black
19	GND	Black
20	NC	NC
21	VCC (+5V)	Red
22	VCC (+5V)	Red
23	VCC (+5V)	Red
24	GND	Black
*Use 22-AWG wire instead of 18-AWG wire.		

DC Power Connector P2

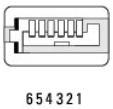
Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connector P3

Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VDC	Yellow

Thermal Sensor P5

DC Power Connector P6



Pin Number	Signal name	18-AWG Wire
1	N/A	N/A

2, 3	+5VDC	Red
4	N/A	N/A
5, 6	COM	Black

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Internal Speaker

Internal Speaker

Installing an Internal Speaker

The internal speaker is an optional device.

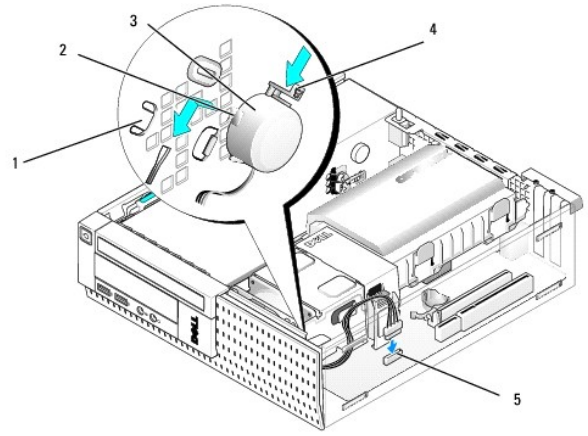
CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.

CAUTION: Disconnect your computer and all attached devices from their electrical outlets.

2. To mount the internal speaker, press the locking tab, position the speaker housing retention tabs under the grill retention tabs provided inside of the front panel, and release the locking tab.



1	front panel grill retention tabs (2)	2	speaker housing retention tabs (2)
3	speaker	4	locking tab
5	system board speaker connector		

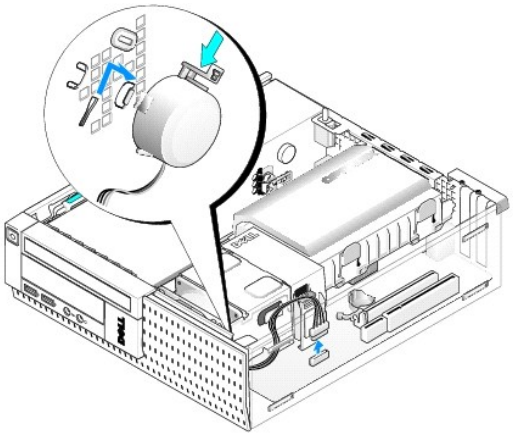
3. Connect the speaker cable to the system board (see System Board Components).
4. Perform the procedure After Working on Your Computer.
5. Boot the computer and check for acceptable speaker performance.

Removing an Internal Speaker

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Perform the procedure Before Working on Your Computer.
2. Disconnect the speaker cable from the system board.
3. To remove the internal speaker, press the locking tab, shift the speaker to move the speaker housing retention tabs away from the grill retention tabs, and lift the speaker from the chassis.



4. Replace the computer cover.
5. Perform the procedure After Working on Your Computer.

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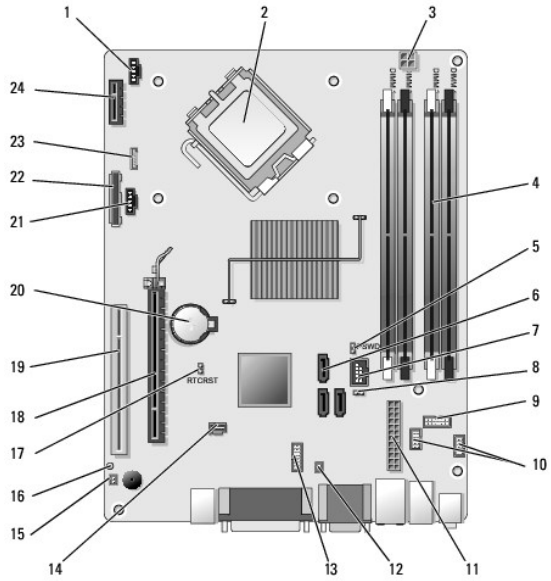
Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- System Board Components

System Board Components



1	heatsink front fan connector (FAN_CPU)	2	processor connector (CPU)
3	processor power connector (12VPOWER)	4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, DIMM_4)
5	password jumper pins (PSWD)	6	SATA drive connectors (3)
7	internal (FlexBay) USB connector	8	service mode jumper pins
9	system status LEDs panel connector (FRONTPANEL)	10	I/O assembly connectors (2)
11	power connector (POWER)	12	PSU thermal sensor connector
13	internal serial port connector	14	intrusion switch connector (INTRUDER)
15	front panel thermal sensor cable connector	16	BIOS/RTC reset jumper pins (RTCRST)
17	BIOS/RTC reset jumper pins (RTCRST)	18	PCIe x16 connector (SLOT1)
19	PCI connector (SLOT2)	20	RTC battery socket (BATTERY)
21	heatsink back fan connector (FAN_HDD)	22	floppy drive connector (DSKT)
23	connector for optional internal speaker (INT_SPKR1)	24	connector for optional wireless card

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Dell™ OptiPlex™ 960 Service Manual

Small Form Factor Computer

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Power Supply
Speakers
Battery
System Board
Memory
Troubleshooting Tips
Contacting Dell

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DCCY

December 2008 Rev. A01

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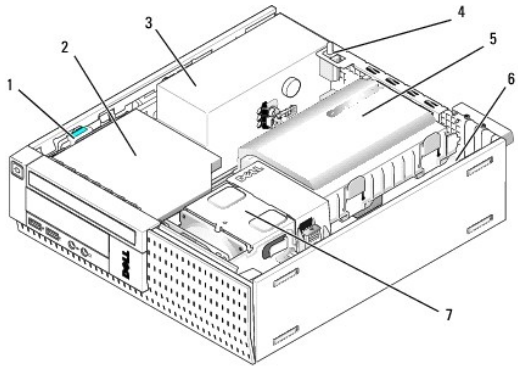
Small Form Factor Computer

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

Inside View of Your Computer

Inside View of Your Computer



1	drive-release latch	2	optical drive
3	power supply assembly	4	intrusion switch
5	hard drive and shroud assembly	6	system board (inside)
7	heatsink assembly		

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System Board

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Removing the System Board: Mini Tower, Desktop, and Small Form Factor Computers
- Replacing the System Board: Mini Tower, Desktop, and Small Form Factor Computers

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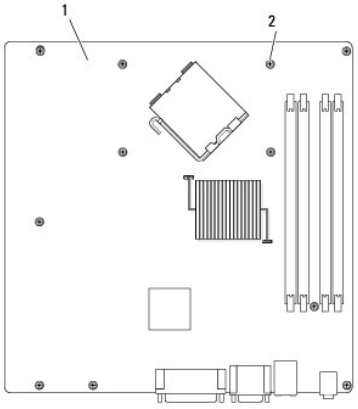
Removing the System Board: Mini Tower, Desktop, and Small Form Factor Computers

1. Perform the procedure Before Working on Your Computer.

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

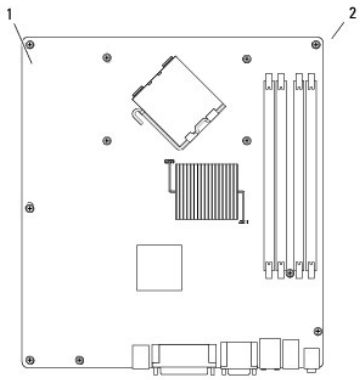
2. Remove any components that restrict access to the system board (optical drive[s], floppy drive, hard drive, I/O assembly (as applicable).
3. Remove the processor and heatsink assembly:
   - Mini tower: see Processor
   - Desktop: see Processor
   - Small form factor: see Processor
4. Disconnect all cables from the system board.
5. Remove the screws from the system board.
   - Mini tower: see Mini Tower System Board Screws
   - Desktop: see Desktop System Board Screws
   - Small form factor: see Small Form Factor System Board Screws
6. Slide the system board assembly toward the front of the computer, and then lift the board up and away.

Mini Tower System Board Screws



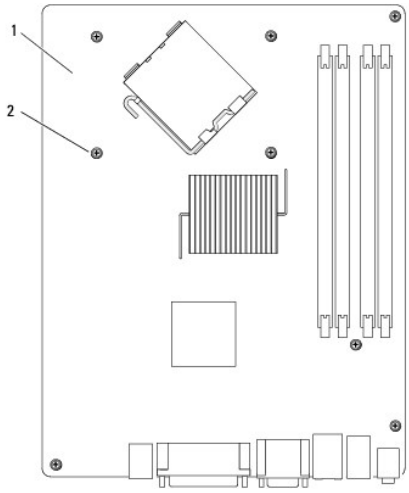
1	mini tower system board	2	screws (11 — 7 on system board, 2 on retention bar, 2 on heatsink shroud)

Desktop System Board Screws



1	desktop system board	2	screws (11 — 7 for system board, 4 for heatsink)

Small Form Factor System Board Screws



1	small form factor system board	2	screws (8 — 4 for system board, 4 for heatsink)

Place the system board assembly that you just removed next to the replacement system board to ensure it is identical.

Replacing the System Board: Mini Tower, Desktop, and Small Form Factor Computers

1. Gently align the board into the chassis and slide it toward the back of the computer.
2. Replace the screws on the system board.
3. Replace any components and cables that you removed from the system board.
4. Reconnect all cables to their connectors at the back of the computer.
5. Perform the procedure After Working on Your Computer.

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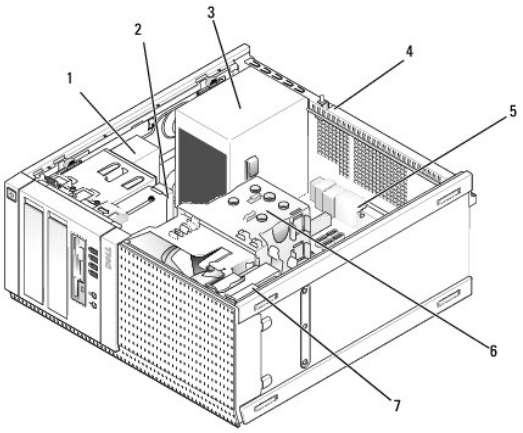
Mini Tower Computer

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

Inside View of Your Computer

Inside View of Your Computer



1	optical drive	2	flex bay device (for optional floppy disk drive, media card reader, etc.)
3	power supply	4	chassis-intrusion switch
5	system board	6	heatsink assembly
7	hard drive		

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Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Troubleshooting Tips

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Using the Hardware Troubleshooter
- Tips

CAUTION: Always unplug your computer from the electrical outlet before opening the cover.

NOTE: For detailed troubleshooting information, including responding to system messages, see your *Service Manual* on **support.dell.com**.

Using the Hardware Troubleshooter

1. Click the Windows Vista Start button , and click **Help and Support.**
2. Type hardware troubleshooter in the search field and press <Enter> to start the search.
3. In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.

Tips

- If a device does not work, ensure that the device is properly connected.
- If you added or removed a part before the problem started, review the installation procedures and ensure that the part is correctly installed.
- If an error message appears on the screen, write down the exact message. This message may help support personnel to diagnose and fix the problem (s).
- If an error message occurs in a program, see the program documentation.

Power Problems

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see www.dell.com/regulatory_compliance.

The diagnostic lights on the front of the computer along with the status of the power button indicate the potential problem with the system. Consult the following table in case of a power problem.

NOTE: The diagnostic lights will blink when the power button is amber or off, and will not when it is blue. This has no other significance.

Light Pattern	Problem Description	Suggested Resolution
Off	The computer is either turned off or not receiving power.	• Reseat the power cable in the power connector on the back of the computer and the electrical outlet. • Bypass power strips, power extension cables, and other power protection devices to verify that the computer turns on properly. • Ensure that any power strips being used are plugged into an electrical outlet and are turned on. • Ensure that the electrical outlet is working by testing it with another device, such as a lamp. • Ensure that the main power cable and front panel cable are securely connected to the system board.
Off	A possible motherboard failure has occurred.	• Unplug the computer. Allow one minute for the power to drain. Plug the computer into a working electrical outlet and press the power button. • If the problem persists, contact Dell (see Contacting Dell).
Blinking Amber	A possible motherboard, power supply, or peripheral failure has occurred.	1. Power off computer, leaving the computer plugged in. Press and hold the power supply test button on the rear of the power supply unit. If the LED next to the switch illuminates, the problem may be with your motherboard. Contact Dell (see Contacting Dell). 2. If the LED next to the switch does not illuminate, disconnect all internal and external peripherals, and press and hold the power supply test button.If it illuminates, there could be a problem with a peripheral. Contact Dell (see Contacting Dell). 3. If the LED still does not illuminate, remove the PSU connections from the motherboard, then press and hold the power supply button. If it illuminates, there could be a problem with the motherboard. Contact Dell (see Contacting Dell).

		4. If the LED still does not illuminate, the problem is probably with the power supply. Contact Dell (see Contacting Dell).
Steady Amber	No CPU detected.	• Reinstall the CPU and restart the system. If the computer still fails to boot, inspect the CPU socket for damage. • If the problem persists, contact Dell (see Contacting Dell).
Steady Amber	Memory modules are detected, but a memory power failure has occurred.	• If two or more memory modules are installed, remove the modules, then reinstall one module and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. If only one memory module is installed, try moving it to a different DIMM connector and restart the computer. • If available, install verified working memory of the same type into your computer. • If the problem persists, contact Dell (see Contacting Dell).
Steady Amber	A possible CPU or motherboard failure has occurred.	• Replace the CPU with a known good CPU. If the computer still fails to boot, inspect the CPU socket for damage. • If the problem persists, contact Dell (see Contacting Dell).
Steady Amber	BIOS may be corrupt or missing.	• The computer hardware is operating normally but the BIOS may be corrupt or missing. Contact Dell (see Contacting Dell).
Steady Amber	A possible motherboard failure has occurred.	• Remove all peripheral cards from the PCI and PCI-E slots and restart the computer. If the computer boots, add the peripheral cards back one by one until you find the bad one. • If the problem persists, the motherboard is probably bad. Contact Dell (see Contacting Dell).
Steady Amber	Power connector not installed properly.	• Reseat the 2x2 power connector from the power supply unit. • If the system still fails to boot, contact Dell (see Contacting Dell).
Steady Amber	Possible peripheral card or motherboard failure has occurred.	• Remove all peripheral cards from the PCI and PCI-E slots and restart the computer. If the computer boots, add the peripheral cards back one by one until you find the bad one. • If the problem persists, the motherboard is probably bad. Contact Dell (see Contacting Dell).
Steady Amber	A possible motherboard failure has occurred.	• Disconnect all internal and external peripherals, and restart the computer. If the computer boots, add the peripheral cards back one by one until you find the bad one. Contacting Dell. • If the problem persists, the motherboard is probably bad. Contact Dell (see Contacting Dell).
Steady Amber	A possible coin cell battery failure has occurred.	• Remove the coin cell battery for one minute, reinstall the battery, and restart. • If the problem persists, contact Dell (see Contacting Dell).

 Steady Blue	The computer is in a normal *on* condition. The diagnostic lights are not lit after the computer successfully boots to the operating system.	• Ensure that the display is connected and powered on. • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	A possible processor failure has occurred.	• Reseat the processor (see Processor information for your computer). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	Memory modules are detected, but a memory failure has occurred.	• If two or more memory modules are installed, remove the modules (see your service manual), then reinstall one module (see your service manual and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install working memory of the same type into your computer (see your service manual). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	A possible graphics card failure has occurred.	• Reseat any installed graphics cards (see the "Cards" section for your computer). • If available, install a working graphics card into your computer. • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	A possible floppy drive or hard drive failure has occurred.	Reseat all power and data cables.
 Steady Blue	A possible USB failure has occurred.	Reinstall all USB devices and check all cable connections.
 Steady Blue	No memory modules are detected.	• If two or more memory modules are installed, remove the modules (see your service manual), then reinstall one module (see your service manual) and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install working memory of the same type into your computer (see your service manual). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	Memory modules are detected, but a memory configuration or compatibility error has occurred.	• Ensure that no special requirements for memory module/connector placement exist. • Ensure that the memory you are using is supported by your computer (see the "Specifications" section for your computer). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Blue	A possible expansion card failure has occurred.	1. Determine if a conflict exists by removing an expansion card (not a graphics card) and restarting the computer (see the "Cards" section for your computer). 2. If the problem persists, reinstall the card you removed, then remove a different card and restart the computer. 3. Repeat this process for each expansion card installed. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts. 4. If the problem persists, contact Dell (see Contacting Dell).
	Another failure has occurred.	• Ensure that all hard drive and optical drive cables are properly connected to the system board (see the "System Board Components" section for your computer). • If there is an error message on the screen identifying a problem with a device (such as the floppy

 Steady Blue		drive or hard drive), check the device to make sure it is functioning properly. l If the operating system is attempting to boot from a device (such as the floppy drive or optical drive), check system setup to ensure the boot sequence is correct for the devices installed on your computer. l If the problem persists, contact Dell (see Contacting Dell).
   Blinking Blue	The computer is in standby mode.	Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

Eliminate interference —

Some possible causes of interference are:

- Power, keyboard, and mouse extension cables
- Too many devices connected to the same power strip
- Multiple power strips connected to the same electrical outlet

Memory Problems

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see www.dell.com/regulatory_compliance.

If you receive an insufficient memory message —

- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
- See the software documentation for minimum memory requirements. If necessary, install additional memory.
- Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
- Run the Dell Diagnostics (see Dell Diagnostics).

If you experience other memory problems —

- Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
- Ensure that you are following the memory installation guidelines.
- Ensure that the memory you are using is supported by your computer. For more information about the type of memory supported by your computer, see Mini Tower Computer Specifications, Desktop Computer Specifications, or Small Form Factor Computer Specifications.
- Run the Dell Diagnostics (see Dell Diagnostics).

Lockups and Software Problems

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell computer to the Windows Classic view.

The computer does not start up

Ensure that the power cable is firmly connected to the computer and to the electrical outlet

A program stops responding

End the program —

1. Press <Ctrl><Shift><Esc> simultaneously to access the Task Manager, and click the **Applications** tab.
2. Click to select the program that is no longer responding, and click **End Task**.

A program crashes repeatedly

NOTE: Most software includes installation instructions in its documentation or on a floppy disk, CD, or DVD.

Check the software documentation —

If necessary, uninstall and then reinstall the program.

A program is designed for an earlier Microsoft® Windows® operating system

Run the Program Compatibility Wizard —

1. Click **Start** → **Control Panel**→ **Programs**→ **Use an older program with this version of Windows.**
2. In the welcome screen, click **Next**.
3. Follow the instructions on the screen.

A solid blue screen appears

Turn the computer off —

If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 6 seconds (until the computer turns off), and then restart your computer.

Other software problems

Check the software documentation or contact the software manufacturer for troubleshooting information —

- Ensure that the program is compatible with the operating system installed on your computer.
- Ensure that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.
- Ensure that the program is installed and configured properly.
- Verify that the device drivers do not conflict with the program.
- If necessary, uninstall and then reinstall the program.

Dell Technical Update Service

The Dell Technical Update service provides proactive e-mail notification of software and hardware updates for your computer. To enroll for the Dell Technical Update service, go to **support.dell.com/technicalupdate**.

Dell Diagnostics

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions that shipped with your computer.

Starting the Dell Diagnostics From Your Hard Drive

1. Ensure that the computer is connected to a working electrical outlet.
2. Turn on (or restart) your computer.

3. When the DELL™ logo appears, press <F12> immediately. Select **Diagnostics** from the start menu and press <Enter>.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop, and then shut down your computer and try again.

   NOTE: If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from the *Drivers and Utilities* media.

4. Press any key to start the Dell Diagnostics from the diagnostics utility partition on your hard drive, and follow the instructions on the screen.

Starting the Dell Diagnostics From the Dell Drivers and Utilities Media

NOTE: The Dell *Drivers and Utilities* media is optional and may not ship with your computer.

1. Insert the *Drivers and Utilities* media.
2. Shut down and restart the computer.

   When the DELL logo appears, press <F12> immediately.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

   NOTE: The next steps change the boot sequence for one time only. On the next start-up, the computer starts according to the devices specified in the system setup program.

3. When the boot device list appears, highlight **CD/DVD/CD-RW** and press <Enter>.
4. Select the **Boot from CD-ROM** option from the menu that appears and press <Enter>.
5. Type 1 to start the CD menu and press <Enter> to proceed.
6. Select **Run the 32 Bit Dell Diagnostics** from the numbered list. If multiple versions are listed, select the version that is appropriate for your computer.
7. When the Dell Diagnostics **Main Menu** appears, select the test that you want to run, and follow the instructions on the screen.

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Working on Your Computer

Dell™ Optiplex™ 960 Mini Tower/Desktop/Small Form Factor Service Manual

- Recommended Tools
- Before Working on Your Computer
- After Working on Your Computer

This document provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that:

- You have performed the steps in Before Working on Your Computer.
- You have read the safety information that shipped with your computer.
- When replacing a component, you have already removed the original, if installed.

NOTE: The color of your system and certain system components may appear differently than shown in this document.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Small plastic scribe
- Flash BIOS update (see the Dell Support website at **support.dell.com**)

Before Working on Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your own personal safety.

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTICE: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

NOTICE: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTICE: To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).

NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

3. Disconnect all telephone or network cables from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets.
5. Press and hold the power button while the system is unplugged to ground the system board.
6. Remove the computer cover.
   - Mini tower: Removing the Mini Tower Computer Cover.
   - Desktop: Removing the Desktop Computer Cover.
   - Small form factor : Removing the Small Form Factor Computer Cover.

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal

components.

Turning Off Your Computer

NOTICE: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system.
2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

After Working on Your Computer

After you have completed any replacement procedures, ensure you connect any external devices, cards, cables, etc. before turning on your computer.

1. Replace the computer cover.
   - Mini tower: Replacing the Mini Tower Computer Cover.
   - Desktop: Replacing the Desktop Computer Cover.
   - Small form factor: Replacing the Small Form Factor Computer Cover.
2. Connect any telephone or network cables to your computer.

NOTICE: To connect a network cable, first plug the cable into the network device and then plug it into the computer.

3. If necessary, set the computer upright.
4. Connect your computer and all attached devices to their electrical outlets.

NOTICE: Ensure that none of the air vents of the system are blocked.

5. Turn on your computer.

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